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Occupational Projections and Training Data 2004-05 Edition

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Occupational Projections and Training Data

2004-05
Edition



U.S. Department of Labor
Elaine L. Chao, Secretary

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Preface

This statistical and research supplement to the 2004-05 *Occupational Outlook Handbook* presents detailed, comprehensive statistics that are used in preparing the *Handbook*. In discussing how the data are prepared and other topics, the supplement offers information that is valuable to training officials, education planners, vocational and employment counselors, jobseekers, and others interested in occupational information. This edition of the supplement is the 17th in a series dating back to 1971.

Chapter I introduces a new analytical product that describes the educational attainment distribution of 25- to 44-year-olds for each of the detailed national employment matrix occupations, based on data drawn from the Current Population Survey (CPS). This new information presents an improved picture of entry paths for national employment matrix occupations and complements information provided since 1994 on the most significant single source of postsecondary education or training. Occupations are grouped into broad education clusters on the basis of their educational attainment distributions. Occupations within each cluster that are relatively high-wage and projected to have high-employment growth are identified and the contribution of each occupation to total projected employment change is measured.

Chapter II discusses the structure of the 2002-12 national employment matrix and the challenges posed by changes in classification systems. Although conversion to the 2000 Standard Occupational System (SOC) was necessary for the 2000-10 projections, the new 2002-12 projections are the first to also reflect the 2002 North American Industry Classification System (NAICS).

Chapter III presents detailed information about all occupations in the national employment matrix. In addition to presenting statistics on employment and employment changes, growth rates, job openings, and self-employed workers, table III-1 includes rankings, from very low to very high, for a number of variables. The table also identifies the most significant source of postsecondary education or training and provides new information on the educational attainment distribution of 24- to 44-year olds for each occupation. The table supplies the user with a comprehensive picture of a specific occupation and makes it easier to com-

pare the attributes of different occupations. The data used in preparing the table are available electronically for those who want to arrange them differently for analytical purposes.

Changes in industry employment and in the utilization of an occupation within an industry affect occupational employment. Chapter IV presents information about the factors driving these changes.

The concept of replacement needs often is confusing. Chapter V explains what the data on replacement needs represent and describes how the data were prepared. Projected replacement rates and estimates of replacement needs for 2002-12 also are presented.

Finally, data from the National Center for Education Statistics on completions of institutional education and training programs by field of study appear in chapter VI.

In all cases, national data are provided. Data for States and local areas may be obtained from sources identified in the appendix.

Art Andreassen, Doug Braddock, C. Hall Dillon, Tamara Dillon, David Frank, Jeff Gruenert, Michael Horri-gan, Henry Kasper, William Lawhorn, Jonathan Kelinson, Roger Moncarz, Erik Savisaar, Terry Schau, Joel Segaloff, Lynn Shniper, and Ian Wyatt prepared this bulletin. Theresa Cosca, Supervisory Economist, Division of Occupational Outlook, and Alan Eck, Manager, Occupational Outlook Studies, supervised its preparation under the general guidance and direction of Michael W. Horrigan, Assistant Commissioner for Occupational Statistics and Employment Projections, and Mike Pilot, Chief, Division of Occupational Outlook. Editorial work was provided by Edith Baker, under the supervision of Mary Kay Rieg. Cover artwork was designed by Andy Attiliis.

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Chapter I. Educational Attainment Data Improve Occupational Analyses

Over the past decade, BLS has identified the most significant single source of postsecondary education or training for each occupation for which employment projections are estimated. Although this classification system is an important source of career advice for individual occupations, the practice of aggregating data within categories results in misleading information about the educational requirements of projected employment growth. Newly developed educational attainment data address this problem. This chapter of *Occupational Projections and Training Data* introduces a new analytical product that describes the educational attainment distribution of 25- to 44-year-olds in each of the 725 occupations for which employment projections have been estimated for the 2002–12 period. For each occupation, the percentages of employees aged 25 to 44 years with a high school degree or less, with some college (including, but not limited to, recipients of associate degrees), and with at least a bachelor's degree are presented.¹ The estimates are based on data drawn from the Current Population Survey (CPS) over 2000–02. These data provide important information that complements the most significant single source of postsecondary education or training assigned by BLS analysts to each occupation.

The data on the educational attainment distribution of occupations also are used to identify education clusters of occupations that provide a natural hierarchical sorting of those occupations that reflects increasing levels of skill, education, and training. These clusters are used to construct estimates of the number of projected jobs that will be filled by those with a high school diploma or less, those with some college, and those with a bachelor's degree or higher. In addition, the clusters are used to develop lists of high-wage, high-demand occupations for the 2002–12 projection period.

Addressing the need for information about occupational educational attainment

BLS identifies 11 education and training categories that describe, for each occupation, the most significant postsecondary education or training pathway to employment in that occupation. To assign occupations to these categories, BLS economists acquire a considerable body of knowledge about occupations and industries based on data from both the Bureau itself and other government and private organizations, as well as through interviews with representatives of professional and trade associations, unions, educators, and training experts, among other sources. For some occupations, such as physicians and lawyers, the education and

training preparation is straightforward, because it is established by government laws and regulations. For other occupations, such as computer programmers or industrial machinery repairers, jobs may vary considerably in their educational and training requirements. When an occupation has more than one path of entry, BLS identifies the one that research suggests is most preferred by employers.²

The 11 extant categories of education and training are as follows:

1. First professional degree
2. Doctoral degree
3. Master's degree
4. Bachelor's or higher degree, plus work experience
5. Bachelor's degree
6. Associate degree
7. Postsecondary vocational award
8. Work experience in a related occupation
9. Long-term on-the-job training
10. Moderate-term on-the-job training
11. Short-term on-the-job training

By construction, these categories are intended to be mutually exclusive and exhaustive. The order in which the categories are listed, from top to bottom, reflects a range from highest to lowest entry requirements. The principal purpose of this classification system is to provide career advice as to the most significant source of postsecondary training needed for entry into the various occupations.

In the past, however, the categories listed also have been used by numerous analysts (including BLS analysts) to calculate the percentage of projected net employment growth that will occur in occupations that "require" a bachelor's degree or higher or that require some college. The calculation involves subsuming the 11 categories under three educational classifications. Typically, analysts have assumed that categories 1–5 represent the "bachelor's degree or higher" classification and categories 6 and 7 the "some college" classification. Although categories 8–11 do not have an explicit educational attainment component and are reserved for occupations that offer on-the-job training or that generally require experience in a related occupation, analysts have inferred that these occupations combined represent a residual category of "high school or less." Most often, this inference is made explicit by assuming that the total level of projected employment in the first two aggregate categories, "bachelor's degree or higher" and "some college," is an estimate of the total number of pro-

¹ A sensitivity analysis of the results to the choice of the 25- to 44-year-old age group is presented on page 41.

² The material in this paragraph was adapted from descriptive material published by the BLS Projections Program.

jected jobs requiring at least some college education.

Using the education-and-training categories to describe the educational attainment of workers in occupations can be quite problematic, especially because they are not intended for that purpose. To see this, consider the occupations in categories 8–11. Jobs that generally require short-term on-the-job training (category 11) are ones for which less than 1 month of training suffices. Moderate-term training (category 10) is assumed to last more than 1 month and less than 12, and long-term training (category 9) lasts more than 1 year. Jobs that generally require work experience in a related occupation (category 8) are assumed to require a level of accumulated skills and experience higher than that of jobs in the long-term on-the-job-training category.

Although it seems reasonable to argue that a job in which a person can be trained in less than 1 month should be placed in the “high school or less” classification, the implicit or explicit use of that label to describe jobs in which the usual pathway is to undertake moderate or long-term training may be a misleading description of the educational hiring preferences of employers. In any number of occupations that put a new employee through a lengthy course of on-the-job training, one may not be surprised to find that employers typically try to hire individuals with at least some college education (or even a bachelor’s degree). In other occupations, a high school diploma may suffice. The point is that the link to the educational attainment preferences of employers is not automatic.

The addition of information on the distribution of educational attainment of each occupation highlights the fact that there are often multiple pathways into an occupation. For example, the most significant source of postsecondary education or training for electricians is long-term on-the-job training. However, assuming that an occupation is in the “high school or less” educational classification is inconsistent with actual data on educational attainment in the occupation: according to 2000–02 CPS data, although half of electricians aged 25 to 44 years are high school graduates, 44 percent have some college as their highest level of educational attainment. Owing to the fact that the most significant source of postsecondary education or training does not provide sufficient information on the educational background of employees, BLS will no longer use the classification system just described as the basis for constructing estimates of the total number of projected jobs generally requiring various levels of education or training. In the material that follows, an alternative paradigm is presented for estimating the number of projected jobs that will be filled by those with a high school education or less, those with some college, and those with a bachelor’s degree or higher. This paradigm groups occupations into broad education clusters on the basis of their educational attainment distributions and uses those clusters to construct the desired estimates.

The education clusters also are used to develop an approach to answering the question “What are the good jobs for those with and for those without a bachelor’s degree?”

Within each education cluster, occupations that pay a relatively high wage and that are projected to have high employment growth are identified, and the contribution of each occupation to the total projected employment change is measured.

Using the educational attainment distributions to identify occupational education clusters

Six education clusters are defined on the basis of the distribution of educational attainment across occupations. A *high school* occupation is defined as an occupation in which the percentage of employees aged 25 to 44 years and having high school as their highest level of educational attainment is greater than or equal to 60 percent—and the percentages of those with some college or with a bachelor’s degree or higher are each less than 20 percent.³ Occupations requiring *some college* and *college* occupations are similarly defined. Three “mixture” occupations are defined. An occupation requiring *high school/some college* is defined as an occupation in which the percentages of those with at most a high school diploma or some college as their highest level of educational attainment are each greater than 20 percent, while the percentage with a bachelor’s degree or higher is less than 20 percent. The other two mixture clusters, *some college/college* and *high school/some college/college* are similarly defined. The definitions of the six clusters are given in exhibit 1.

Exhibit 1. Definitions of education clusters

Education cluster	Percent of employees aged 25 to 44 in the occupation whose highest level of educational attainment is—		
	High school or less	Some college (including associate degree)	Bachelor's degree or higher
High school occupations	Greater than or equal to 60 percent	Less than 20 percent	Less than 20 percent
High school/some college occupations	Greater than or equal to 20 percent	Greater than or equal to 20 percent	Less than 20 percent
Some college occupations	Less than 20 percent	Greater than or equal to 60 percent	Less than 20 percent
High school/some college/ college occupations	Greater than or equal to 20 percent	Greater than or equal to 20 percent	Greater than or equal to 20 percent
Some college/ college occupations	Less than 20 percent	Greater than or equal to 20 percent	Greater than or equal to 20 percent
College occupations	Less than 20 percent	Less than 20 percent	Greater than or equal to 60 percent

³ The age grouping of 25 to 44 years is used, although, in some cases, proxy estimates were obtained by estimating the educational distribution of those 25 years and older or 16 years and older.

Based on the logic of these definitions, one cluster that is missing from the list is the set of high school/college mixture occupations. These are occupations in which the percentage of employees with some college is less than 20 percent, while the percentage with high school or less and the percentage with a bachelor's degree or higher are both 20 percent or greater. Because only eight occupations fell into this category, those occupations were reassigned to the full mixture cluster, high school/some college/college.

The order of these clusters from top to bottom is designed to reflect the fact that earnings consistently increase with educational attainment. Hence, a *high school* occupation would be expected to have lower median earnings than it would as a *high school/some college* occupation. In a similar way, median earnings for a *high school/some college* occupation would be expected to be lower than they would be as a pure *some college* occupation. Moving from a *some college* occupation to the full mixture cluster, *high school/some college/college* represents the addition of lower high school earnings and higher college earnings, but the negative impact of high school earnings is expected to be less than the positive impact of college earnings, given the increasing relationship between earnings and educational attainment.

Table I-1 presents the educational attainment distributions of each of the 725 detailed occupations for which BLS published 2002–12 employment projections. The occupations are sorted first by the six education clusters just defined and then, within each cluster, in descending order based on the median earnings of the occupation from the 2002 OES survey. The 2002 and the 2012 projected employment levels of each occupation are shown, along with the numeric and percentage changes in employment over the projection period. For detailed information on methodology, see “The educational attainment distribution of occupations: A note on methodology” on page 33.

Comparing the most significant source of postsecondary education or training with the occupational education clusters

Table I-1 also shows the most significant source of postsecondary education or training that BLS assigns to each occupation.⁴ BLS occupational analysts assign these single classifications on the basis of extensive research that is conducted every 2 years in preparation for the publication of the agency's *Occupational Outlook Handbook*. Some occupations, such as physicians and lawyers, are more easily assigned single education and training levels than others, such as computer programmers or registered nurses. The latter two occupations are both assigned the associate degree as their most significant source of postsecondary education or training. The addition of information on educational attainment distribution underscores the idea that there are often multiple pathways to obtaining entry into an occupation and complements information identifying the most significant source of postsecondary education

or training.

In the case of registered nurses, for example, the development of programs that permit entry into the occupation through a combination of associate degree and long-term on-the-job training provides an important alternative route to either attending a three-year nursing school or obtaining a bachelor's degree in nursing. Still, as table I-1 indicates, 40.1 percent of registered nurses have some college as their highest level of educational attainment, while 58.1 percent have a bachelor's degree or higher. In fact, the percentage of registered nurses with a bachelor's degree or higher has grown over the last decade, rising from 49 percent in 1994. However, recent data from the National Center for Education Statistics on degrees awarded from 2001–02 show that the number of associate degrees awarded in nursing (41,783) continues to exceed the number of bachelor's degrees awarded (32,209). This gap may be the result of registered nurses initially entering the field with an associate degree and then returning later to complete a bachelor's degree. Alternatively, some may receive a bachelor's degree in another field and return to receive nursing training through an associate-degree program. On the basis of the balance of the evidence available, BLS continues to assign the associate degree as the most significant source of postsecondary education or training for the nursing occupation. The multiplicity of educational pathways into nursing, however, underscores the value of adding data on the educational attainment distribution of those in the occupation.

The grouping of occupations into the six education clusters provides a natural hierarchical sorting of occupations based on the training and skill requirements found within each cluster. It is not surprising that high school occupations all have short, moderate, or long-term on-the-job training as their most significant source of postsecondary education or training. Nor is it surprising that college occupations all have the bachelor's degree or higher as their most significant source of postsecondary education or training. By contrast, it is the mixture occupations that reflect a substantial diversity in the pathways to entry into occupations. In general, the occupations classified as “high school/some college” have a greater concentration of the short, moderate, and long-term training categories as their single education descriptor, while the “some college/college” occupations have a greater concentration of higher education awards as their single most significant source of postsecondary education or training.

The widest range of training and education categories is found in the full-mixture “high school/some college/college” occupations. An occupation such as flight attendant is classified as generally requiring long-term on-the-job training as its most significant source of postsecondary education or training, but the hiring pattern of employers results in a diverse mix of those with high school, some college, and bachelor's degree or higher backgrounds. This mix reflects the interplay between training requirements and employer preferences for characteristics

(Text continues on page 34)

⁴ See Chapter III for additional information about the categories.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
47-2021 Brickmasons and blockmasons	Long-term on-the-job training	HS	83.2	13.3	3.5
47-2072 Pile-driver operators ⁷	Moderate-term on-the-job training	HS	80.5	17.1	2.4
53-5021 Captains, mates, and pilots of water vessels	Work experience in a related occupation	HS	72.4	13.6	13.9
47-4041 Hazardous materials removal workers	Moderate-term on-the-job training	HS	74.3	18.0	7.7
47-2044 Tile and marble setters	Long-term on-the-job training	HS	77.6	18.4	3.9
47-2051 Cement masons and concrete finishers	Moderate-term on-the-job training	HS	85.4	12.7	2.0
47-2081 Drywall and ceiling tile installers	Moderate-term on-the-job training	HS	83.8	13.8	2.3
47-2082 Tapers	Moderate-term on-the-job training	HS	83.8	13.8	2.3
47-2181 Roofers	Moderate-term on-the-job training	HS	84.6	12.1	3.2
47-2041 Carpet installers	Moderate-term on-the-job training	HS	77.6	18.4	3.9
47-2171 Reinforcing iron and rebar workers ³	Long-term on-the-job training	HS	83.8	10.7	5.6
47-2053 Terrazzo workers and finishers ⁴	Long-term on-the-job training	HS	85.4	12.7	2.0
47-2022 Stonemasons	Long-term on-the-job training	HS	83.2	13.3	3.5
47-2161 Plasterers and stucco masons	Long-term on-the-job training	HS	86.7	10.6	2.7
47-2042 Floor layers, except carpet, wood, and hard tiles	Moderate-term on-the-job training	HS	77.6	18.4	3.9
53-7041 Hoist and winch operators ³	Moderate-term on-the-job training	HS	78.1	19.4	2.5
47-2071 Paving, surfacing, and tamping equipment operators ² ..	Moderate-term on-the-job training	HS	88.4	11.4	2
51-7032 Patternmakers, wood ⁷	Long-term on-the-job training	HS	70.2	19.4	10.4
47-2141 Painters, construction and maintenance	Moderate-term on-the-job training	HS	77.2	16.9	5.9
45-1000 Supervisors, farming, fishing, and forestry workers	Work experience in a related occupation	HS	77.6	12.1	10.4
53-7021 Crane and tower operators	Moderate-term on-the-job training	HS	87.4	10.9	1.7
47-2073 Operating engineers and other construction equipment operators	Moderate-term on-the-job training	HS	78.5	19.1	2.4
53-7032 Excavating and loading machine and dragline operators	Moderate-term on-the-job training	HS	83.9	15.5	.7
45-3021 Hunters and trappers ⁷	Moderate-term on-the-job training	HS	74.0	18.0	8.0
47-2043 Floor sanders and finishers	Moderate-term on-the-job training	HS	77.6	18.4	3.9
47-5031 Explosives workers, ordnance handling experts, and blasters ⁷	Moderate-term on-the-job training	HS	76.6	19.5	3.8
51-4023 Rolling machine setters, operators, and tenders, metal and plastic ²	Moderate-term on-the-job training	HS	75.7	18.1	6.2
47-5012 Rotary drill operators, oil and gas ⁵	Moderate-term on-the-job training	HS	69.5	18.1	12.4
51-4035 Milling and planing machine setters, operators, and tenders, metal and plastic ⁷	Moderate-term on-the-job training	HS	78.4	19.0	2.6
47-5011 Derrick operators, oil and gas ⁵	Moderate-term on-the-job training	HS	69.5	18.1	12.4
53-7031 Dredge operators ⁴	Moderate-term on-the-job training	HS	83.9	15.5	.7
51-4191 Heat treating equipment setters, operators, and tenders, metal and plastic ²	Moderate-term on-the-job training	HS	78.6	18.5	2.9
47-5013 Service unit operators, oil, gas, and mining ⁵	Moderate-term on-the-job training	HS	69.5	18.1	12.4
47-5099 Extraction workers, all other ²	Moderate-term on-the-job training	HS	83.2	14.4	2.4
51-4051 Metal-refining furnace operators and tenders	Moderate-term on-the-job training	HS	77.9	18.2	3.9
51-4052 Pourers and casters, metal ²	Moderate-term on-the-job training	HS	78.5	15.5	6.0
53-7121 Tank car, truck, and ship loaders ⁷	Moderate-term on-the-job training	HS	77.0	19.5	3.5
45-4021 Fallers ⁴	Moderate-term on-the-job training	HS	85.1	10.8	4.1
51-6091 Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers ⁷	Moderate-term on-the-job training	HS	80.3	14.5	5.2
53-7033 Loading machine operators, underground mining ⁴	Moderate-term on-the-job training	HS	83.9	15.5	.7
47-5061 Roof bolters, mining ⁷	Moderate-term on-the-job training	HS	76.6	19.5	3.8
53-7111 Shuttle car operators ⁷	Short-term on-the-job training	HS	77.0	19.5	3.5
47-4999 All other construction trades and related workers	Moderate-term on-the-job training	HS	81.0	11.4	7.6
49-9095 Manufactured building and mobile home installers	Moderate-term on-the-job training	HS	73.7	18.5	7.8
37-3011 Landscaping and groundskeeping workers	Short-term on-the-job training	HS	76.5	17.7	5.8
49-3092 Recreational vehicle service technicians ⁴	Long-term on-the-job training	HS	87.9	9.8	2.3
51-9111 Packaging and filling machine operators and tenders ..	Short-term on-the-job training	HS	81.7	15.5	2.8
49-9098 Helpers—installation, maintenance, and repair workers ²	Short-term on-the-job training	HS	83.6	15.5	.9
47-3019 All other helpers, construction trades ³	Short-term on-the-job training	HS	82.3	14.0	3.7
47-3016 Helpers—roofers ⁴	Short-term on-the-job training	HS	81.2	12.8	6.1
37-3013 Tree trimmers and pruners	Short-term on-the-job training	HS	76.5	17.7	5.8
51-3023 Slaughterers and meat packers	Moderate-term on-the-job training	HS	81.2	16.2	2.6
47-3013 Helpers—electricians	Short-term on-the-job training	HS	81.2	12.8	6.1

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numeric	Percent	
\$41,840	VH	148	169	21	14.2	47-2021 Brickmasons and blockmasons
45,420	VH	5	6	0	8.2	47-2072 Pile-driver operators ⁷
49,850	VH	25	26	1	2.4	53-5021 Captains, mates, and pilots of water vessels
32,460	H	38	54	16	43.1	47-4041 Hazardous materials removal workers
35,770	H	33	42	9	26.5	47-2044 Tile and marble setters
30,660	H	182	229	47	26.1	47-2051 Cement masons and concrete finishers
33,710	H	135	164	29	21.4	47-2081 Drywall and ceiling tile installers
39,000	H	41	49	8	20.8	47-2082 Tapers
30,180	H	166	197	31	18.6	47-2181 Roofers
32,590	H	82	96	14	16.8	47-2041 Carpet installers
36,740	H	29	33	5	16.7	47-2171 Reinforcing iron and rebar workers ³
27,910	H	6	7	1	15.2	47-2053 Terrazzo workers and finishers ⁴
34,040	H	17	19	2	14.1	47-2022 Stonemasons
33,100	H	59	67	8	13.5	47-2161 Plasterers and stucco masons
33,590	H	31	35	4	13.4	47-2042 Floor layers, except carpet, wood, and hard tiles
31,400	H	9	10	1	13.0	53-7041 Hoist and winch operators ³
28,860	H	58	65	7	12.6	47-2071 Paving, surfacing, and tamping equipment operators ²
29,780	H	4	5	0	11.8	51-7032 Patternmakers, wood ⁷
29,070	H	448	500	52	11.6	47-2141 Painters, construction and maintenance
31,140	H	52	58	6	11.4	45-1000 Supervisors, farming, fishing, and forestry workers
36,330	H	50	55	5	10.8	53-7021 Crane and tower operators
35,240	H	353	389	37	10.4	47-2073 Operating engineers and other construction equipment operators
32,410	H	80	87	7	8.9	53-7032 Excavating and loading machine and dragline operators
30,660	H	1	2	0	6.4	45-3021 Hunters and trappers ⁷
27,500	H	17	18	1	4.2	47-2043 Floor sanders and finishers
35,110	H	5	5	0	2.0	47-5031 Explosives workers, ordnance handling experts, and blasters ⁷
28,330	H	44	45	1	2.0	51-4023 Rolling machine setters, operators, and tenders, metal and plastic ²
33,750	H	14	14	0	1.5	47-5012 Rotary drill operators, oil and gas ⁵
29,210	H	31	31	0	.8	51-4035 Milling and planing machine setters, operators, and tenders, metal and plastic ⁷
29,820	H	15	15	0	.8	47-5011 Derrick operators, oil and gas ⁵
27,730	H	3	3	0	.3	53-7031 Dredge operators ⁴
28,200	H	29	29	0	-.6	51-4191 Heat treating equipment setters, operators, and tenders, metal and plastic ²
28,670	H	13	13	0	-.8	47-5013 Service unit operators, oil, gas, and mining ⁵
29,110	H	12	12	0	-.8	47-5099 Extraction workers, all other ²
30,770	H	18	17	0	-.8	51-4051 Metal-refining furnace operators and tenders
27,880	H	13	13	0	-2.0	51-4052 Pourers and casters, metal ²
32,500	H	17	17	0	-2.1	53-7121 Tank car, truck, and ship loaders ⁷
28,160	H	14	14	0	-3.4	45-4021 Fallers ⁴
27,500	H	27	24	-4	-13.1	51-6091 Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers ⁷
31,930	H	4	3	-1	-14.1	53-7033 Loading machine operators, underground mining ⁴
38,430	H	4	3	-1	-27.7	47-5061 Roof bolters, mining ⁷
38,360	H	3	2	-1	-31.3	53-7111 Shuttle car operators ⁷
22,900	L	110	146	35	32.0	47-4999 All other construction trades and related workers
23,170	L	18	22	4	23.4	49-9095 Manufactured building and mobile home installers
19,770	L	1,074	1,311	237	22.0	37-3011 Landscaping and groundskeeping workers
27,080	L	13	15	3	21.8	49-3092 Recreational vehicle service technicians ⁴
21,210	L	387	468	82	21.2	51-9111 Packaging and filling machine operators and tenders
21,440	L	150	181	30	20.3	49-9098 Helpers—installation, maintenance, and repair workers ²
20,230	L	44	53	9	19.4	47-3019 All other helpers, construction trades ³
20,480	L	21	25	4	19.3	47-3016 Helpers—roofers ⁴
25,110	L	59	69	11	18.6	37-3013 Tree trimmers and pruners
20,370	L	128	151	23	18.2	51-3023 Slaughterers and meat packers
23,090	L	99	117	18	18.0	47-3013 Helpers—electricians

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
53-7081 Refuse and recyclable material collectors	Short-term on-the-job training	HS	79.0	14.6	6.4
47-4091 Segmental pavers ⁴	Moderate-term on-the-job training	HS	81.0	11.4	7.6
37-9099 All other building and grounds cleaning and maintenance workers	Short-term on-the-job training	HS	79.2	17.3	3.5
47-3014 Helpers—painters, paperhangers, plasterers, and stucco masons ⁴	Short-term on-the-job training	HS	81.2	12.8	6.1
47-5051 Rock splitters, quarry ⁴	Moderate-term on-the-job training	HS	84.0	12.8	3.3
47-2061 Construction laborers	Moderate-term on-the-job training	HS	79.5	15.6	4.8
47-3012 Helpers—carpenters	Short-term on-the-job training	HS	81.2	12.8	6.1
47-4031 Fence erectors	Moderate-term on-the-job training	HS	75.5	17.5	7.0
53-7011 Conveyor operators and tenders ⁷	Short-term on-the-job training	HS	77.0	19.5	3.5
53-7051 Industrial truck and tractor operators	Short-term on-the-job training	HS	78.8	17.9	3.3
47-3015 Helpers—pipelayers, plumbers, pipefitters, and steamfitters ²	Short-term on-the-job training	HS	80.8	13.8	5.4
49-3022 Automotive glass installers and repairers	Long-term on-the-job training	HS	77.6	12.7	9.7
51-7031 Model makers, wood ⁷	Long-term on-the-job training	HS	70.2	19.4	10.4
37-3012 Pesticide handlers, sprayers, and applicators, vegetation	Moderate-term on-the-job training	HS	76.5	17.7	5.8
51-3093 Food cooking machine operators and tenders ³	Short-term on-the-job training	HS	81.7	14.0	4.4
49-3093 Tire repairers and changers	Short-term on-the-job training	HS	87.9	9.8	2.3
51-9031 Cutters and trimmers, hand	Short-term on-the-job training	HS	81.1	17.0	1.9
51-3092 Food batchmakers	Short-term on-the-job training	HS	77.1	18.4	4.5
51-9193 Cooling and freezing equipment operators and tenders ⁷	Moderate-term on-the-job training	HS	75.3	19.9	4.8
51-9192 Cleaning, washing, and metal pickling equipment operators and tenders ²	Moderate-term on-the-job training	HS	88.0	8.9	3.1
51-9032 Cutting and slicing machine setters, operators, and tenders	Moderate-term on-the-job training	HS	81.1	17.0	1.9
47-5071 Roustabouts, oil and gas ⁷	Moderate-term on-the-job training	HS	76.6	19.5	3.8
51-9195 Molders, shapers, and casters, except metal and plastic	Moderate-term on-the-job training	HS	64.6	17.3	18.1
45-2021 Animal breeders ⁷	Moderate-term on-the-job training	HS	81.8	12.9	5.3
45-9099 All other farming, fishing, and forestry workers	Moderate-term on-the-job training	HS	83.6	11.8	4.6
51-3091 Food and tobacco roasting, baking, and drying machine operators and tenders ⁷	Short-term on-the-job training	HS	76.9	18.9	4.2
47-5081 Helpers—extraction workers ⁷	Short-term on-the-job training	HS	76.6	19.5	3.8
51-7021 Furniture finishers	Long-term on-the-job training	HS	76.3	17.2	6.5
53-5022 Motorboat operators ⁴	Moderate-term on-the-job training	HS	72.4	13.6	13.9
51-4033 Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	Moderate-term on-the-job training	HS	82.5	13.8	3.6
47-3011 Helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters ³	Short-term on-the-job training	HS	82.3	14.0	3.7
51-9191 Cementing and gluing machine operators and tenders	Moderate-term on-the-job training	HS	82.7	17.3	0
51-7041 Sawing machine setters, operators, and tenders, wood	Moderate-term on-the-job training	HS	86.1	13.5	4
45-4023 Log graders and scalers ⁴	Moderate-term on-the-job training	HS	85.1	10.8	4.1
53-7063 Machine feeders and offbearers	Short-term on-the-job training	HS	81.0	15.7	3.3
51-3021 Butchers and meat cutters	Long-term on-the-job training	HS	81.2	16.2	2.6
51-4193 Plating and coating machine setters, operators, and tenders, metal and plastic	Moderate-term on-the-job training	HS	86.4	7.4	6.3
45-4022 Logging equipment operators ²	Moderate-term on-the-job training	HS	83.3	12.5	4.2
51-6093 Upholsterers	Long-term on-the-job training	HS	80.1	19.9	0
51-6062 Textile cutting machine setters, operators, and tenders ²	Moderate-term on-the-job training	HS	90.7	8.5	8
51-6092 Fabric and apparel patternmakers ⁷	Long-term on-the-job training	HS	80.3	14.5	5.2
51-6042 Shoe machine operators and tenders ⁴	Moderate-term on-the-job training	HS	83.7	10.4	6.0
45-3011 Fishers and related fishing workers	Moderate-term on-the-job training	HS	75.4	16.2	8.4
51-6061 Textile bleaching and dyeing machine operators and tenders ⁷	Moderate-term on-the-job training	HS	88.5	9.8	1.7

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numeric	Percent	
\$24,130	L	134	158	24	17.6	53-7081 Refuse and recyclable material collectors
26,940	L	2	3	0	16.5	47-4091 Segmental pavers ⁴
20,990	L	125	145	20	16.1	37-9099 All other building and grounds cleaning and maintenance workers
20,100	L	31	36	5	15.9	47-3014 Helpers—painters, paperhangers, plasterers, and stucco masons ⁴
26,170	L	3	3	0	14.3	47-5051 Rock splitters, quarry ⁴
24,740	L	938	1,070	133	14.2	47-2061 Construction laborers
21,510	L	97	111	14	14.0	47-3012 Helpers—carpenters
22,160	L	27	31	4	13.4	47-4031 Fence erectors
24,250	L	58	65	7	12.4	53-7011 Conveyor operators and tenders ⁷
26,070	L	594	659	66	11.1	53-7051 Industrial truck and tractor operators
22,230	L	79	88	9	10.9	47-3015 Helpers—pipelayers, plumbers, pipefitters, and steamfitters ²
26,890	L	22	24	2	10.7	49-3022 Automotive glass installers and repairers
24,740	L	4	5	0	10.3	51-7031 Model makers, wood ⁷
24,830	L	27	30	3	9.7	37-3012 Pesticide handlers, sprayers, and applicators, vegetation
21,860	L	34	37	3	8.8	51-3093 Food cooking machine operators and tenders ³
20,160	L	83	89	7	8.0	49-3093 Tire repairers and changers
22,020	L	31	33	2	7.6	51-9031 Cutters and trimmers, hand
21,920	L	74	79	5	7.2	51-3092 Food batchmakers
21,240	L	7	8	1	7.1	51-9193 Cooling and freezing equipment operators and tenders ⁷
22,850	L	18	19	1	6.9	51-9192 Cleaning, washing, and metal pickling equipment operators and tenders ²
25,690	L	77	83	5	6.6	51-9032 Cutting and slicing machine setters, operators, and tenders
22,280	L	32	34	2	6.4	47-5071 Roustabouts, oil and gas ⁷
24,700	L	46	49	3	6.4	51-9195 Molders, shapers, and casters, except metal and plastic
25,090	L	9	10	1	6.1	45-2021 Animal breeders ⁷
21,450	L	96	101	4	4.5	45-9099 All other farming, fishing, and forestry workers
23,260	L	19	20	1	4.2	51-3091 Food and tobacco roasting, baking, and drying machine operators and tenders ⁷
25,200	L	29	30	1	3.9	47-5081 Helpers—extraction workers ⁷
22,710	L	39	41	1	3.3	51-7021 Furniture finishers
26,440	L	4	4	0	2.7	53-5022 Motorboat operators ⁴
26,120	L	104	106	3	2.4	51-4033 Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic
24,390	L	59	61	1	2.2	47-3011 Helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters ³
23,190	L	27	28	0	1.0	51-9191 Cementing and gluing machine operators and tenders
22,080	L	56	56	0	-2	51-7041 Sawing machine setters, operators, and tenders, wood
27,200	L	10	10	0	-1.2	45-4023 Log graders and scalers ⁴
21,840	L	164	162	-2	-1.4	53-7063 Machine feeders and offbearers
25,500	L	132	129	-3	-2.5	51-3021 Butchers and meat cutters
25,420	L	44	42	-1	-2.6	51-4193 Plating and coating machine setters, operators, and tenders, metal and plastic
26,790	L	43	41	-2	-3.6	45-4022 Logging equipment operators ²
24,670	L	56	51	-5	-8.7	51-6093 Upholsterers
20,320	L	34	26	-8	-22.6	51-6062 Textile cutting machine setters, operators, and tenders ²
26,360	L	11	8	-3	-24.6	51-6092 Fabric and apparel patternmakers ⁷
20,600	L	7	5	-2	-26.1	51-6042 Shoe machine operators and tenders ⁴
20,710	L	36	27	-10	-26.8	45-3011 Fishers and related fishing workers
20,800	L	27	19	-8	-28.7	51-6061 Textile bleaching and dyeing machine operators and tenders ⁷

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
51-6064 Textile winding, twisting, and drawing out machine setters, operators, and tenders	Moderate-term on-the-job training	HS	87.9	11.7	.4
51-6063 Textile knitting and weaving machine setters, operators, and tenders	Long-term on-the-job training	HS	89.3	7.9	2.8
53-3099 All other motor vehicle operators ²	Short-term on-the-job training	HS	73.0	16.8	10.2
35-3021 Combined food preparation and serving workers, including fast food	Short-term on-the-job training	HS	76.7	18.1	5.3
35-2021 Food preparation workers	Short-term on-the-job training	HS	76.9	17.7	5.4
53-6021 Parking lot attendants	Short-term on-the-job training	HS	70.3	19.4	10.3
49-3091 Bicycle repairers ⁴	Moderate-term on-the-job training	HS	87.9	9.8	2.3
37-2011 Janitors and cleaners, except maids and housekeeping cleaners	Short-term on-the-job training	HS	79.2	17.3	3.5
51-3022 Meat, poultry, and fish cutters and trimmers	Short-term on-the-job training	HS	81.2	16.2	2.6
35-2014 Cooks, restaurant	Long-term on-the-job training	HS	78.3	16.4	5.3
35-9098 All other food preparation and serving related workers	Short-term on-the-job training	HS	78.3	16.4	5.3
35-9011 Dining room and cafeteria attendants and bartender helpers	Short-term on-the-job training	HS	78.4	14.6	7.0
53-7064 Packers and packagers, hand	Short-term on-the-job training	HS	83.3	12.6	4.1
51-3099 All other food processing workers	Short-term on-the-job training	HS	81.2	16.2	2.6
51-6011 Laundry and dry-cleaning workers	Moderate-term on-the-job training	HS	82.4	13.6	4.0
37-2012 Maid and housekeeping cleaners	Short-term on-the-job training	HS	81.5	13.9	4.6
35-9021 Dishwashers	Short-term on-the-job training	HS	89.6	7.4	3.0
35-2015 Cooks, short order	Short-term on-the-job training	HS	78.3	16.4	5.3
53-7061 Cleaners of vehicles and equipment	Short-term on-the-job training	HS	78.1	17.4	4.5
51-9198 Helpers—production workers	Short-term on-the-job training	HS	77.3	17.3	5.4
45-2091 Agricultural equipment operators	Moderate-term on-the-job training	HS	83.6	11.8	4.6
45-2041 Graders and sorters, agricultural products	Work experience in a related occupation	HS	80.9	12.0	7.1
35-2011 Cooks, fast food	Short-term on-the-job training	HS	78.3	16.4	5.3
45-4011 Forest and conservation workers ²	Moderate-term on-the-job training	HS	73.2	16.3	10.6
45-2093 Farmworkers, farm and ranch animals	Short-term on-the-job training	HS	83.6	11.8	4.6
45-2092 Farmworkers and laborers, crop, nursery, and greenhouse	Short-term on-the-job training	HS	83.6	11.8	4.6
51-6099 All other textile, apparel, and furnishings workers	Short-term on-the-job training	HS	86.2	10.5	3.4
35-2012 Cooks, institution and cafeteria	Moderate-term on-the-job training	HS	78.3	16.4	5.3
51-6021 Pressers, textile, garment, and related materials	Short-term on-the-job training	HS	89.8	8.4	1.8
35-2013 Cooks, private household ⁴	Long-term on-the-job training	HS	78.3	16.4	5.3
51-6031 Sewing machine operators	Moderate-term on-the-job training	HS	86.7	10.2	3.1
47-4021 Elevator installers and repairers	Long-term on-the-job training	HS/SC	68.4	31.3	.3
49-1011 First-line supervisors/managers of mechanics, installers, and repairers	Work experience in a related occupation	HS/SC	47.7	40.2	12.1
47-1011 First-line supervisors/managers of construction trades and extraction workers	Work experience in a related occupation	HS/SC	63.0	26.9	10.1
53-4039 Subway, streetcar operators and all other rail transportation workers ⁷	Work experience in a related occupation	HS/SC	50.9	37.6	11.6
11-9071 Gaming managers ²	Work experience in a related occupation	HS/SC	38.0	45.8	16.2
53-1031 First-line supervisors/managers of transportation and material-moving machine and vehicle operators	Work experience in a related occupation	HS/SC	50.0	36.5	13.5
49-9012 Control and valve installers and repairers, except mechanical door ²	Moderate-term on-the-job training	HS/SC	55.9	34.2	9.9
33-2020 Fire inspectors ²	Work experience in a related occupation	HS/SC	44.7	38.9	16.4
49-3011 Aircraft mechanics and service technicians	Postsecondary vocational award	HS/SC	36.1	52.7	11.2
17-3023 Electrical and electronic engineering technicians	Associate degree	HS/SC	28.8	54.5	16.7
51-1011 First-line supervisors/managers of production and operating workers	Work experience in a related occupation	HS/SC	58.7	28.8	12.5
17-3026 Industrial engineering technicians	Associate degree	HS/SC	28.8	54.5	16.7
53-6051 Transportation inspectors	Work experience in a related occupation	HS/SC	39.7	45.9	14.4
49-9069 All other precision instrument and equipment repairers ²	Long-term on-the-job training	HS/SC	38.6	43.4	18.0
51-8092 Gas plant operators ⁴	Long-term on-the-job training	HS/SC	54.6	39.0	6.4

See footnotes at end of table

Table 1-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numerical	Percent	
\$21,920	L	66	46	-20	-30.3	51-6064 Textile winding, twisting, and drawing out machine setters, operators, and tenders
22,970	L	53	33	-20	-38.6	51-6063 Textile knitting and weaving machine setters, operators, and tenders
18,620	VL	111	139	28	25.2	53-3099 All other motor vehicle operators ²
14,900	VL	1,990	2,444	454	22.8	35-3021 Combined food preparation and serving workers, including fast food
16,330	VL	850	1,032	172	20.2	35-2021 Food preparation workers
16,320	VL	107	128	21	19.2	53-6021 Parking lot attendants
19,230	VL	7	8	1	18.8	49-3091 Bicycle repairers ⁴
18,250	VL	2,267	2,681	414	18.3	37-2011 Janitors and cleaners, except maids and housekeeping cleaners
17,820	VL	154	179	25	16.4	51-3022 Meat, poultry, and fish cutters and trimmers
19,050	VL	727	843	116	15.9	35-2014 Cooks, restaurant
16,320	VL	117	134	18	15.2	35-9098 All other food preparation and serving related workers
14,530	VL	409	470	61	14.9	35-9011 Dining room and cafeteria attendants and bartender helpers
16,700	VL	920	1,052	132	14.4	53-7064 Packers and packagers, hand
19,410	VL	42	48	6	13.4	51-3099 All other food processing workers
16,780	VL	231	260	29	12.3	51-6011 Laundry and dry-cleaning workers
16,440	VL	1,492	1,629	137	9.2	37-2012 Maid and housekeeping cleaners
14,860	VL	505	551	46	9.0	35-9021 Dishwashers
16,270	VL	227	247	20	9.0	35-2015 Cooks, short order
17,060	VL	344	374	30	8.7	53-7061 Cleaners of vehicles and equipment
19,240	VL	467	503	36	7.7	51-9198 Helpers—production workers
17,290	VL	61	65	4	7.3	45-2091 Agricultural equipment operators
15,940	VL	49	52	3	6.7	45-2041 Graders and sorters, agricultural products
14,350	VL	588	617	29	5.0	35-2011 Cooks, fast food
18,960	VL	14	15	1	4.5	45-4011 Forest and conservation workers ²
17,090	VL	53	56	2	4.4	45-2093 Farmworkers, farm and ranch animals
15,070	VL	617	641	24	4.0	45-2092 Farmworkers and laborers, crop, nursery, and greenhouse
18,740	VL	61	63	2	3.3	51-6099 All other textile, apparel, and furnishings workers
18,140	VL	436	445	9	2.1	35-2012 Cooks, institution and cafeteria
17,070	VL	91	91	0	-2	51-6021 Pressers, textile, garment, and related materials
16,692	VL	8	8	0	-5.4	35-2013 Cooks, private household ⁴
17,440	VL	315	216	-99	-31.5	51-6031 Sewing machine operators
54,070	VH	21	25	4	17.1	47-4021 Elevator installers and repairers
47,580	VH	444	512	68	15.4	49-1011 First-line supervisors/managers of mechanics, installers, and repairers
47,670	VH	633	722	89	14.1	47-1011 First-line supervisors/managers of construction trades and extraction workers
44,680	VH	15	17	2	13.2	53-4039 Subway, streetcar operators and all other rail transportation workers ⁷
54,330	VH	6	7	1	12.4	11-9071 Gaming managers ²
42,910	VH	207	232	25	12.0	53-1031 First-line supervisors/managers of transportation and material-moving machine and vehicle operators
43,460	VH	38	42	5	12.0	49-9012 Control and valve installers and repairers, except mechanical door ²
44,250	VH	14	16	2	11.6	33-2020 Fire inspectors ²
43,070	VH	131	145	14	11.0	49-3011 Aircraft mechanics and service technicians
42,950	VH	204	224	20	10.0	17-3023 Electrical and electronic engineering technicians
42,930	VH	733	803	70	9.5	51-1011 First-line supervisors/managers of production and operating workers
41,910	VH	62	67	5	8.7	17-3026 Industrial engineering technicians
48,450	VH	29	32	2	7.7	53-6051 Transportation inspectors
44,090	VH	17	18	1	7.0	49-9069 All other precision instrument and equipment repairers ²
48,340	VH	12	13	1	6.7	51-8092 Gas plant operators ⁴

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
49-9044 Millwrights	Long-term on-the-job training	HS/SC	60.2	39.3	5
53-5031 Ship engineers ⁷	Postsecondary vocational award	HS/SC	59.5	26.6	13.9
49-2091 Avionics technicians ⁷	Postsecondary vocational award	HS/SC	49.4	44.1	6.5
47-2011 Boilermakers ²	Long-term on-the-job training	HS/SC	66.0	31.2	2.8
49-9051 Electrical power-line installers and repairers	Long-term on-the-job training	HS/SC	61.1	34.6	4.3
17-3021 Aerospace engineering and operations technicians ²	Associate degree	HS/SC	29.9	53.8	16.2
53-7071 Gas compressor and gas pumping station operators ⁵ ..	Moderate-term on-the-job training	HS/SC	52.2	38.8	9.0
51-4111 Tool and die makers	Long-term on-the-job training	HS/SC	47.5	47.3	5.2
51-8013 Power plant operators	Long-term on-the-job training	HS/SC	49.8	38.0	12.2
51-8021 Stationary engineers and boiler operators	Long-term on-the-job training	HS/SC	53.7	35.4	11.0
49-2095 Electrical and electronics repairers, powerhouse, substation, and relay ⁵	Postsecondary vocational award	HS/SC	31.5	63.4	5.1
49-2022 Telecommunications equipment installers and repairers, except line installers	Long-term on-the-job training	HS/SC	40.8	48.2	11.0
51-8012 Power distributors and dispatchers ³	Long-term on-the-job training	HS/SC	47.1	40.5	12.4
49-9097 Signal and track switch repairers ⁷	Moderate-term on-the-job training	HS/SC	63.2	28.2	8.6
51-8011 Nuclear power reactor operators ⁴	Long-term on-the-job training	HS/SC	49.8	38.0	12.2
53-4031 Railroad conductors and yardmasters	Work experience in a related occupation	HS/SC	46.8	42.4	10.9
53-4010 Locomotive engineers and firemen	Work experience in a related occupation	HS/SC	46.8	47.3	5.9
51-8093 Petroleum pump system operators, refinery operators, and gaugers ²	Long-term on-the-job training	HS/SC	57.6	37.5	4.9
51-8091 Chemical plant and system operators	Long-term on-the-job training	HS/SC	54.6	39.0	6.4
53-4021 Railroad brake, signal, and switch operators ⁷	Work experience in a related occupation	HS/SC	50.9	37.6	11.6
29-2054 Respiratory therapy technicians	Postsecondary vocational award	HS/SC	33.7	54.0	12.3
49-9021 Heating, air conditioning, and refrigeration mechanics and installers	Long-term on-the-job training	HS/SC	59.6	36.8	3.6
49-2098 Security and fire alarm systems installers	Postsecondary vocational award	HS/SC	49.0	44.8	6.2
43-9031 Desktop publishers ⁷	Postsecondary vocational award	HS/SC	42.6	41.1	16.3
17-3025 Environmental engineering technicians ²	Associate degree	HS/SC	29.9	53.8	16.2
29-2055 Surgical technologists	Postsecondary vocational award	HS/SC	33.7	54.0	12.3
33-3012 Correctional officers and jailers	Moderate-term on-the-job training	HS/SC	43.1	46.9	10.0
47-2111 Electricians	Long-term on-the-job training	HS/SC	49.8	44.1	6.1
17-3031 Surveying and mapping technicians	Moderate-term on-the-job training	HS/SC	47.5	45.4	7.2
49-9011 Mechanical door repairers ⁴	Moderate-term on-the-job training	HS/SC	59.2	30.0	10.8
37-1012 First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers	Work experience in a related occupation	HS/SC	50.7	29.5	19.8
47-4071 Septic tank services and sewer pipe cleaners ³	Moderate-term on-the-job training	HS/SC	66.2	28.5	5.3
49-9094 Locksmiths and safe repairers	Moderate-term on-the-job training	HS/SC	70.7	25.2	4.1
33-2011 Fire fighters	Long-term on-the-job training	HS/SC	25.9	57.8	16.3
29-2061 Licensed practical and licensed vocational nurses	Postsecondary vocational award	HS/SC	23.2	71.7	5.1
47-2211 Sheet metal workers	Moderate-term on-the-job training	HS/SC	68.7	29.5	1.8
49-2099 All other electrical and electronic equipment mechanics, installers, and repairers	Postsecondary vocational award	HS/SC	40.8	48.2	11.0
53-3032 Truck drivers, heavy and tractor-trailer	Moderate-term on-the-job training	HS/SC	70.9	24.2	4.9
43-6012 Legal secretaries	Postsecondary vocational award	HS/SC	37.2	47.0	15.9
49-9052 Telecommunications line installers and repairers	Long-term on-the-job training	HS/SC	48.1	46.5	5.3
47-2152 Plumbers, pipefitters, and steamfitters	Long-term on-the-job training	HS/SC	67.0	28.8	4.2
49-3051 Motorboat mechanics ²	Long-term on-the-job training	HS/SC	62.9	34.7	2.4
51-9122 Painters, transportation equipment	Moderate-term on-the-job training	HS/SC	76.7	20.8	2.5
47-2121 Glaziers	Long-term on-the-job training	HS/SC	61.3	33.9	4.8
51-4121 Welders, cutters, solderers, and brazers	Long-term on-the-job training	HS/SC	74.6	23.2	2.2
49-9042 Maintenance and repair workers, general	Moderate-term on-the-job training	HS/SC	56.7	34.8	8.5
37-1011 First-line supervisors/managers of housekeeping and janitorial workers	Work experience in a related occupation	HS/SC	61.7	29.6	8.6
51-9082 Medical appliance technicians ²	Long-term on-the-job training	HS/SC	50.4	34.2	15.4
51-8031 Water and liquid waste treatment plant and system operators	Long-term on-the-job training	HS/SC	48.7	43.8	7.5
47-2221 Structural iron and steel workers	Long-term on-the-job training	HS/SC	70.9	27.8	1.3
27-2032 Choreographers ³	Work experience in a related occupation	HS/SC	57.5	33.5	9.0
35-1011 Chefs and head cooks	Work experience in a related occupation	HS/SC	47.7	38.0	14.3
47-2130 Insulation workers	Moderate-term on-the-job training	HS/SC	66.1	30.6	3.4

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numeric	Percent	
\$41,990	VH	69	73	4	5.3	49-9044 Millwrights
51,190	VH	8	9	0	4.5	53-5031 Ship engineers ⁷
42,030	VH	23	24	1	3.4	49-2091 Avionics technicians ⁷
41,960	VH	25	25	0	1.7	47-2011 Boilermakers ²
46,530	VH	101	103	2	1.6	49-9051 Electrical power-line installers and repairers
51,650	VH	15	15	0	1.5	17-3021 Aerospace engineering and operations technicians ²
42,510	VH	7	7	0	1.0	53-7071 Gas compressor and gas pumping station operators ⁵
42,730	VH	109	110	0	.4	51-4111 Tool and die makers
49,920	VH	35	36	0	.3	51-8013 Power plant operators
43,240	VH	55	56	0	.3	51-8021 Stationary engineers and boiler operators
51,690	VH	21	21	0	-.6	49-2095 Electrical and electronics repairers, powerhouse, substation, and relay ⁵
47,380	VH	219	217	-1	-.6	49-2022 Telecommunications equipment installers and repairers, except line installers
54,120	VH	12	12	0	-3.0	51-8012 Power distributors and dispatchers ³
43,370	VH	8	8	0	-3.0	49-9097 Signal and track switch repairers ⁷
61,060	VH	3	3	0	-3.2	51-8011 Nuclear power reactor operators ⁴
44,490	VH	38	36	-2	-4.2	53-4031 Railroad conductors and yardmasters
45,450	VH	33	31	-2	-7.2	53-4010 Locomotive engineers and firemen
49,280	VH	39	35	-4	-11.0	51-8093 Petroleum pump system operators, refinery operators, and gaugers ²
43,940	VH	58	51	-7	-12.3	51-8091 Chemical plant and system operators
43,520	VH	15	12	-3	-22.8	53-4021 Railroad brake, signal, and switch operators ⁷
34,130	H	26	35	9	34.2	29-2054 Respiratory therapy technicians
34,900	H	249	328	79	31.8	49-9021 Heating, air conditioning, and refrigeration mechanics and installers
32,370	H	46	60	14	30.2	49-2098 Security and fire alarm systems installers
31,620	H	35	45	10	29.2	43-9031 Desktop publishers ⁷
36,850	H	19	24	5	28.4	17-3025 Environmental engineering technicians ²
31,210	H	72	92	20	27.9	29-2055 Surgical technologists
32,670	H	427	531	103	24.2	33-3012 Correctional officers and jailers
41,390	H	659	814	154	23.4	47-2111 Electricians
29,230	H	60	74	14	23.2	17-3031 Surveying and mapping technicians
29,190	H	11	13	2	21.8	49-9011 Mechanical door repairers ⁴
33,050	H	150	182	32	21.6	37-1012 First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers
27,940	H	18	22	4	21.2	47-4071 Septic tank servicers and sewer pipe cleaners ³
28,430	H	23	28	5	21.0	49-9094 Locksmiths and safe repairers
36,230	H	282	340	58	20.7	33-2011 Fire fighters
31,440	H	702	844	142	20.2	29-2061 Licensed practical and licensed vocational nurses
34,560	H	205	246	41	19.8	47-2211 Sheet metal workers
35,160	H	22	26	4	19.6	49-2099 All other electrical and electronic equipment mechanics, installers, and repairers
33,210	H	1,767	2,104	337	19.0	53-3032 Truck drivers, heavy and tractor-trailer
35,020	H	264	313	50	18.8	43-6012 Legal secretaries
39,640	H	167	199	31	18.8	49-9052 Telecommunications line installers and repairers
40,170	H	492	584	92	18.7	47-2152 Plumbers, pipefitters, and steamfitters
29,050	H	22	26	4	18.3	49-3051 Motorboat mechanics ²
33,550	H	50	59	9	17.5	51-9122 Painters, transportation equipment
31,620	H	49	57	8	17.2	47-2121 Glaziers
29,160	H	391	457	66	17.0	51-4121 Welders, cutters, solderers, and brazers
29,370	H	1,266	1,472	207	16.3	49-9042 Maintenance and repair workers, general
28,140	H	230	267	37	16.2	37-1011 First-line supervisors/managers of housekeeping and janitorial workers
27,680	H	14	16	2	16.1	51-9082 Medical appliance technicians ²
33,390	H	99	115	16	16.0	51-8031 Water and liquid waste treatment plant and system operators
40,660	H	78	90	12	15.9	47-2221 Structural iron and steel workers
29,470	H	17	20	3	15.8	27-2032 Choreographers ³
27,940	H	132	153	21	15.8	35-1011 Chefs and head cooks
28,930	H	53	62	8	15.8	47-2130 Insulation workers

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
53-1011 Aircraft cargo handling supervisors ⁴	Work experience in a related occupation	HS/SC	50.0	36.5	13.5
51-4192 Lay-out workers, metal and plastic ⁷	Moderate-term on-the-job training	HS/SC	76.3	20.0	3.7
43-5011 Cargo and freight agents	Moderate-term on-the-job training	HS/SC	50.1	36.7	13.2
49-3099 All other vehicle and mobile equipment mechanics, installers, and repairers	Moderate-term on-the-job training	HS/SC	66.8	30.0	3.2
53-3021 Bus drivers, transit and intercity	Moderate-term on-the-job training	HS/SC	63.9	29.2	7.0
49-9062 Medical equipment repairers	Associate degree	HS/SC	36.0	49.0	15.0
51-4061 Model makers, metal and plastic ⁵	Moderate-term on-the-job training	HS/SC	59.0	38.5	2.4
43-5032 Dispatchers, except police, fire, and ambulance	Moderate-term on-the-job training	HS/SC	44.1	43.7	12.2
49-9096 Riggers ⁷	Short-term on-the-job training	HS/SC	63.2	28.2	8.6
49-3031 Bus and truck mechanics and diesel engine specialists	Postsecondary vocational award	HS/SC	66.0	30.6	3.4
53-1021 First-line supervisors/managers of helpers, laborers, and material movers, hand	Work experience in a related occupation	HS/SC	50.0	36.5	13.5
49-3021 Automotive body and related repairers	Long-term on-the-job training	HS/SC	73.7	21.8	4.5
51-4012 Numerical tool and process control programmers ⁴	Long-term on-the-job training	HS/SC	58.5	36.5	5.0
43-5031 Police, fire, and ambulance dispatchers	Moderate-term on-the-job training	HS/SC	44.1	43.7	12.2
49-3023 Automotive service technicians and mechanics	Postsecondary vocational award	HS/SC	66.8	30.0	3.2
49-9099 Installation, maintenance, and repair workers, all other	Moderate-term on-the-job training	HS/SC	62.3	25.6	12.1
47-2151 Pipelayers	Moderate-term on-the-job training	HS/SC	67.0	28.8	4.2
17-3024 Electro-mechanical technicians	Associate degree	HS/SC	28.8	54.5	16.7
17-3027 Mechanical engineering technicians	Associate degree	HS/SC	28.8	54.5	16.7
49-9092 Commercial divers ⁷	Moderate-term on-the-job training	HS/SC	63.2	28.2	8.6
47-4051 Highway maintenance workers	Moderate-term on-the-job training	HS/SC	74.9	23.2	1.9
49-2094 Electrical and electronics repairers, commercial and industrial equipment ⁵	Postsecondary vocational award	HS/SC	31.5	63.4	5.1
47-2031 Carpenters	Long-term on-the-job training	HS/SC	72.7	22.2	5.1
49-3042 Mobile heavy equipment mechanics, except engines	Postsecondary vocational award	HS/SC	63.2	31.1	5.7
33-3011 Bailiffs ²	Moderate-term on-the-job training	HS/SC	44.8	43.9	11.3
39-1021 First-line supervisors/managers of personal service workers	Work experience in a related occupation	HS/SC	45.6	39.7	14.8
51-4011 Computer-controlled machine tool operators, metal and plastic	Moderate-term on-the-job training	HS/SC	58.5	36.5	5.0
53-6041 Traffic technicians ⁴	Short-term on-the-job training	HS/SC	36.7	54.9	8.4
51-5021 Job printers	Long-term on-the-job training	HS/SC	66.5	27.0	6.5
43-6011 Executive secretaries and administrative assistants	Moderate-term on-the-job training	HS/SC	37.2	47.0	15.9
51-4081 Multiple machine tool setters, operators, and tenders, metal and plastic ⁷	Moderate-term on-the-job training	HS/SC	72.3	24.3	3.3
51-4041 Machinists	Long-term on-the-job training	HS/SC	63.9	32.4	3.7
47-5021 Earth drillers, except oil and gas	Moderate-term on-the-job training	HS/SC	78.4	20.5	1.2
17-3022 Civil engineering technicians	Associate degree	HS/SC	28.8	54.5	16.7
49-2093 Electrical and electronics installers and repairers, transportation equipment ⁷	Postsecondary vocational award	HS/SC	49.4	44.1	6.5
51-9197 Tire builders	Moderate-term on-the-job training	HS/SC	49.9	44.2	6.0
51-4199 All other metal workers and plastic workers	Moderate-term on-the-job training	HS/SC	75.7	21.5	2.7
43-3051 Payroll and timekeeping clerks	Moderate-term on-the-job training	HS/SC	37.9	46.8	15.2
49-9063 Musical instrument repairers and tuners ⁴	Long-term on-the-job training	HS/SC	36.0	49.0	15.0
51-2041 Structural metal fabricators and fitters	Moderate-term on-the-job training	HS/SC	79.3	20.7	.0
47-2142 Paperhangers ²	Moderate-term on-the-job training	HS/SC	57.9	34.9	7.2
49-9043 Maintenance workers, machinery	Short-term on-the-job training	HS/SC	72.6	25.3	2.2
49-9045 Refractory materials repairers, except brickmasons ⁴	Moderate-term on-the-job training	HS/SC	60.4	34.3	5.3
51-8099 All other plant and system operators ²	Long-term on-the-job training	HS/SC	57.6	37.5	4.9
53-5099 All other water transportation workers	Short-term on-the-job training	HS/SC	50.0	36.5	13.5
49-9041 Industrial machinery mechanics	Long-term on-the-job training	HS/SC	60.4	34.3	5.3
49-9031 Home appliance repairers	Long-term on-the-job training	HS/SC	69.9	25.4	4.7
49-2092 Electric motor, power tool, and related repairers	Postsecondary vocational award	HS/SC	49.4	43.7	6.9
51-5023 Printing machine operators	Moderate-term on-the-job training	HS/SC	70.6	25.3	4.1
49-3043 Rail car repairers ²	Long-term on-the-job training	HS/SC	65.8	29.5	4.7
53-5011 Sailors and marine oilers ²	Short-term on-the-job training	HS/SC	69.8	24.8	5.4
43-9041 Insurance claims and policy processing clerks	Moderate-term on-the-job training	HS/SC	39.4	44.4	16.2

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numeric	Percent	
\$37,220	H	9	10	1	15.6	53-1011 Aircraft cargo handling supervisors ⁴
30,760	H	13	15	2	15.6	51-4192 Lay-out workers, metal and plastic ⁷
31,410	H	59	68	9	15.5	43-5011 Cargo and freight agents
35,840	H	36	41	6	15.4	49-3099 All other vehicle and mobile equipment mechanics, installers, and repairers
29,580	H	202	233	31	15.2	53-3021 Bus drivers, transit and intercity
36,380	H	29	33	4	14.8	49-9062 Medical equipment repairers
38,000	H	9	10	1	14.6	51-4061 Model makers, metal and plastic ⁵
30,280	H	170	194	24	14.4	43-5032 Dispatchers, except police, fire, and ambulance
33,790	H	14	16	2	14.3	49-9096 Riggers ⁷
34,380	H	267	305	38	14.2	49-3031 Bus and truck mechanics and diesel engine specialists
37,180	H	147	168	21	14.0	53-1021 First-line supervisors/managers of helpers, laborers, and material movers, hand
32,680	H	198	225	26	13.2	49-3021 Automotive body and related repairers
37,520	H	19	22	3	13.0	51-4012 Numerical tool and process control programmers ⁴
27,660	H	92	104	12	12.7	43-5031 Police, fire, and ambulance dispatchers
30,590	H	818	919	101	12.4	49-3023 Automotive service technicians and mechanics
33,010	H	185	207	23	12.2	49-9099 Installation, maintenance, and repair workers, all other
28,500	H	58	65	7	11.8	47-2151 Pipelayers
38,120	H	31	35	4	11.5	17-3024 Electro-mechanical technicians
41,280	H	55	61	6	11.0	17-3027 Mechanical engineering technicians
34,710	H	4	5	0	10.6	49-9092 Commercial divers ⁷
28,390	H	154	170	16	10.4	47-4051 Highway maintenance workers
41,110	H	85	94	9	10.4	49-2094 Electrical and electronics repairers, commercial and industrial equipment ⁵
34,190	H	1,209	1,331	122	10.1	47-2031 Carpenters
35,970	H	126	138	12	9.6	49-3042 Mobile heavy equipment mechanics, except engines
32,710	H	15	16	1	9.5	33-3011 Bailiffs ²
28,960	H	216	236	20	9.4	39-1021 First-line supervisors/managers of personal service workers
29,050	H	132	144	12	9.3	51-4011 Computer-controlled machine tool operators, metal and plastic
31,850	H	6	6	1	9.3	53-6041 Traffic technicians ⁴
30,100	H	56	61	5	9.2	51-5021 Job printers
33,410	H	1,526	1,658	132	8.7	43-6011 Executive secretaries and administrative assistants
28,690	H	99	107	8	8.3	51-4081 Multiple machine tool setters, operators, and tenders, metal and plastic ⁷
32,570	H	387	419	32	8.2	51-4041 Machinists
32,490	H	23	25	2	7.7	47-5021 Earth drillers, except oil and gas
37,720	H	92	99	7	7.6	17-3022 Civil engineering technicians
38,610	H	18	19	1	7.1	49-2093 Electrical and electronics installers and repairers, transportation equipment ⁷
38,840	H	14	15	1	6.6	51-9197 Tire builders
28,400	H	104	111	7	6.6	51-4199 All other metal workers and plastic workers
29,000	H	198	211	13	6.5	43-3051 Payroll and timekeeping clerks
29,440	H	6	7	0	6.3	49-9063 Musical instrument repairers and tuners ⁴
28,620	H	89	94	6	6.2	51-2041 Structural metal fabricators and fitters
31,650	H	20	21	1	5.9	47-2142 Paperhangers ²
32,520	H	92	97	5	5.9	49-9043 Maintenance workers, machinery
35,100	H	4	4	0	5.6	49-9045 Refractory materials repairers, except brickmasons ⁴
36,660	H	32	33	2	5.6	51-8099 All other plant and system operators ²
30,520	H	4	4	0	5.6	53-5099 All other water transportation workers
37,980	H	197	208	11	5.5	49-9041 Industrial machinery mechanics
30,390	H	42	44	2	5.5	49-9031 Home appliance repairers
32,210	H	31	33	2	5.3	49-2092 Electric motor, power tool, and related repairers
29,010	H	199	208	9	4.6	51-5023 Printing machine operators
39,080	H	15	15	1	4.5	49-3043 Rail car repairers ²
28,370	H	27	28	1	4.0	53-5011 Sailors and marine oilers ²
28,870	H	266	276	10	3.6	43-9041 Insurance claims and policy processing clerks

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
51-9081 Dental laboratory technicians	Long-term on-the-job training	HS/SC	51.8	34.6	13.6
51-4062 Patternmakers, metal and plastic ⁵	Moderate-term on-the-job training	HS/SC	59.0	38.5	2.4
43-3031 Bookkeeping, accounting, and auditing clerks	Moderate-term on-the-job training	HS/SC	40.4	43.8	15.8
51-4032 Drilling and boring machine tool setters, operators, and tenders, metal and plastic ²	Moderate-term on-the-job training	HS/SC	72.9	23.1	4.0
51-5012 Bookbinders ⁴	Moderate-term on-the-job training	HS/SC	70.4	21.5	8.1
51-4122 Welding, soldering, and brazing machine setters, operators, and tenders	Moderate-term on-the-job training	HS/SC	74.6	23.2	2.2
51-9012 Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders	Moderate-term on-the-job training	HS/SC	46.2	36.4	17.5
51-4034 Lathe and turning machine tool setters, operators, and tenders, metal and plastic	Moderate-term on-the-job training	HS/SC	77.4	20.9	1.7
43-5051 Postal service clerks	Short-term on-the-job training	HS/SC	43.8	41.5	14.7
43-5052 Postal service mail carriers	Short-term on-the-job training	HS/SC	52.0	40.2	7.8
51-2031 Engine and other machine assemblers ²	Short-term on-the-job training	HS/SC	70.5	26.0	3.5
51-9196 Paper goods machine setters, operators, and tenders ..	Moderate-term on-the-job training	HS/SC	75.0	22.8	2.2
51-9011 Chemical equipment operators and tenders	Moderate-term on-the-job training	HS/SC	46.2	36.4	17.5
51-9051 Furnace, kiln, oven, drier, and kettle operators and tenders	Moderate-term on-the-job training	HS/SC	71.2	23.0	5.7
53-7072 Pump operators, except wellhead pumpers ⁵	Moderate-term on-the-job training	HS/SC	52.2	38.8	9.0
51-9023 Mixing and blending machine setters, operators, and tenders	Moderate-term on-the-job training	HS/SC	67.9	28.6	3.6
43-3061 Procurement clerks	Short-term on-the-job training	HS/SC	55.7	30.9	13.4
47-5042 Mine cutting and channeling machine operators ³	Moderate-term on-the-job training	HS/SC	72.4	24.3	3.3
49-9061 Camera and photographic equipment repairers ⁴	Moderate-term on-the-job training	HS/SC	36.0	49.0	15.0
51-4194 Tool grinders, filers, and sharpeners ²	Moderate-term on-the-job training	HS/SC	68.4	22.5	9.1
51-2011 Aircraft structure, surfaces, rigging, and systems assemblers ⁷	Long-term on-the-job training	HS/SC	74.7	20.4	4.9
43-5053 Postal service mail sorters, processors, and processing machine operators	Short-term on-the-job training	HS/SC	44.5	40.7	14.7
47-5049 All other mining machine operators ⁴	Moderate-term on-the-job training	HS/SC	71.0	24.8	4.2
51-5022 Prepress technicians and workers	Long-term on-the-job training	HS/SC	57.1	30.0	12.9
47-4061 Rail-track laying and maintenance equipment operators ⁷	Moderate-term on-the-job training	HS/SC	61.5	28.9	9.6
53-7073 Wellhead pumpers ⁵	Moderate-term on-the-job training	HS/SC	52.2	38.8	9.0
43-5041 Meter readers, utilities	Short-term on-the-job training	HS/SC	57.2	38.8	4.1
53-6011 Bridge and lock tenders ⁷	Short-term on-the-job training	HS/SC	62.8	30.3	6.9
47-5041 Continuous mining machine operators ²	Moderate-term on-the-job training	HS/SC	70.7	25.7	3.5
43-2099 All other communications equipment operators ⁷	Short-term on-the-job training	HS/SC	53.5	38.5	8.0
49-2021 Radio mechanics ⁴	Postsecondary vocational award	HS/SC	40.8	48.2	11.0
43-2021 Telephone operators	Short-term on-the-job training	HS/SC	42.3	48.0	9.7
31-9092 Medical assistants	Moderate-term on-the-job training	HS/SC	36.6	49.8	13.5
29-2071 Medical records and health information technicians	Associate degree	HS/SC	35.5	48.1	16.4
29-2056 Veterinary technologists and technicians	Associate degree	HS/SC	33.7	54.0	12.3
31-9091 Dental assistants	Moderate-term on-the-job training	HS/SC	34.2	57.4	8.4
29-2041 Emergency medical technicians and paramedics	Postsecondary vocational award	HS/SC	24.4	62.9	12.7
43-4171 Receptionists and information clerks	Short-term on-the-job training	HS/SC	49.7	38.6	11.8
29-2052 Pharmacy technicians	Moderate-term on-the-job training	HS/SC	33.7	54.0	12.3
43-4111 Interviewers, except eligibility and loan	Short-term on-the-job training	HS/SC	30.1	50.3	19.6
31-9099 All other healthcare support workers	Short-term on-the-job training	HS/SC	36.6	49.8	13.5
39-3092 Costume attendants ⁴	Short-term on-the-job training	HS/SC	45.8	40.5	13.7
31-1012 Nursing aides, orderlies, and attendants	Short-term on-the-job training	HS/SC	62.7	31.4	5.9
33-9031 Gaming surveillance officers and gaming investigators ⁴	Moderate-term on-the-job training	HS/SC	52.5	34.7	12.8
43-3011 Bill and account collectors	Short-term on-the-job training	HS/SC	45.6	35.7	18.7
53-3033 Truck drivers, light or delivery services	Short-term on-the-job training	HS/SC	60.9	25.9	13.2
31-9094 Medical transcriptionists	Postsecondary vocational award	HS/SC	36.6	49.8	13.5
29-2051 Dietetic technicians	Moderate-term on-the-job training	HS/SC	33.7	54.0	12.3
39-5094 Skin care specialists	Postsecondary vocational award	HS/SC	58.6	32.8	8.7
53-2099 All other air transportation workers	Moderate-term on-the-job training	HS/SC	50.0	36.5	13.5

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation	
Dollars	Rank ¹¹	2002	2012	Numeric	Percent		
\$28,500	H	47	49	2	3.6	51-9081	Dental laboratory technicians
33,470	H	6	7	0	3.6	51-4062	Patternmakers, metal and plastic ⁵
27,380	H	1,983	2,042	59	3.0	43-3031	Bookkeeping, accounting, and auditing clerks
27,530	H	53	54	1	2.1	51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic ²
27,680	H	7	7	0	1.3	51-5012	Bookbinders ⁴
28,900	H	61	62	1	.9	51-4122	Welding, soldering, and brazing machine setters, operators, and tenders
30,340	H	36	36	0	.8	51-9012	Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders
30,270	H	75	75	1	.8	51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic
39,700	H	77	77	0	-.5	43-5051	Postal service clerks
39,530	H	334	333	-2	-.5	43-5052	Postal service mail carriers
29,170	H	50	49	-1	-1.9	51-2031	Engine and other machine assemblers ²
28,280	H	117	114	-3	-2.8	51-9196	Paper goods machine setters, operators, and tenders
37,430	H	58	56	-2	-3.8	51-9011	Chemical equipment operators and tenders
28,210	H	31	29	-2	-4.9	51-9051	Furnace, kiln, oven, drier, and kettle operators and tenders
36,470	H	13	13	-1	-5.0	53-7072	Pump operators, except wellhead pumpers ⁵
27,530	H	106	99	-7	-6.5	51-9023	Mixing and blending machine setters, operators, and tenders
29,600	H	77	72	-5	-6.7	43-3061	Procurement clerks
37,590	H	5	5	0	-7.1	47-5042	Mine cutting and channeling machine operators ³
31,390	H	7	6	0	-7.2	49-9061	Camera and photographic equipment repairers ⁴
29,400	H	26	24	-2	-7.7	51-4194	Tool grinders, filers, and sharpeners ²
38,910	H	27	24	-2	-9.4	51-2011	Aircraft structure, surfaces, rigging, and systems assemblers ⁷
38,150	H	253	226	-26	-10.5	43-5053	Postal service mail sorters, processors, and processing machine operators
38,780	H	4	4	0	-10.8	47-5049	All other mining machine operators ⁴
31,150	H	91	81	-10	-11.2	51-5022	Prepress technicians and workers
35,160	H	11	9	-1	-11.5	47-4061	Rail-track laying and maintenance equipment operators ⁷
33,770	H	11	10	-1	-11.7	53-7073	Wellhead pumpers ⁵
28,830	H	54	46	-8	-14.1	43-5041	Meter readers, utilities
35,310	H	4	3	-1	-17.4	53-6011	Bridge and lock tenders ⁷
34,850	H	8	7	-2	-18.5	47-5041	Continuous mining machine operators ²
31,640	H	18	14	-5	-24.6	43-2099	All other communications equipment operators ⁷
36,230	H	7	5	-2	-29.3	49-2021	Radio mechanics ⁴
28,600	H	50	22	-28	-56.3	43-2021	Telephone operators
23,940	L	365	579	215	58.9	31-9092	Medical assistants
23,890	L	147	216	69	46.8	29-2071	Medical records and health information technicians
22,950	L	53	76	23	44.1	29-2056	Veterinary technologists and technicians
27,240	L	266	379	113	42.5	31-9091	Dental assistants
24,030	L	179	238	59	33.1	29-2041	Emergency medical technicians and paramedics
21,150	L	1,100	1,425	325	29.5	43-4171	Receptionists and information clerks
22,250	L	211	271	61	28.8	29-2052	Pharmacy technicians
21,690	L	193	247	54	28.0	43-4111	Interviewers, except eligibility and loan
23,690	L	198	251	53	26.6	31-9099	All other healthcare support workers
24,160	L	4	5	1	25.1	39-3092	Costume attendants ⁴
19,960	L	1,375	1,718	343	24.9	31-1012	Nursing aides, orderlies, and attendants
23,110	L	9	11	2	24.6	33-9031	Gaming surveillance officers and gaming investigators ⁴
26,780	L	413	514	101	24.4	43-3011	Bill and account collectors
23,870	L	1,022	1,259	237	23.2	53-3033	Truck drivers, light or delivery services
27,140	L	101	124	23	22.6	31-9094	Medical transcriptionists
22,490	L	29	35	6	20.2	29-2051	Dietetic technicians
22,450	L	25	30	5	19.4	39-5094	Skin care specialists
23,330	L	12	14	2	19.4	53-2099	All other air transportation workers

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁶	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
49-3053 Outdoor power equipment and other small engine mechanics	Moderate-term on-the-job training	HS/SC	59.6	39.6	.7
49-3052 Motorcycle mechanics ³	Long-term on-the-job training	HS/SC	63.9	34.0	2.1
39-5091 Makeup artists, theatrical and performance ⁴	Postsecondary vocational award	HS/SC	58.6	32.8	8.7
29-2081 Opticians, dispensing	Long-term on-the-job training	HS/SC	22.2	60.1	17.7
31-9093 Medical equipment preparers	Short-term on-the-job training	HS/SC	36.6	49.8	13.5
51-9123 Painting, coating, and decorating workers	Short-term on-the-job training	HS/SC	76.7	20.8	2.5
43-6013 Medical secretaries	Postsecondary vocational award	HS/SC	37.2	47.0	15.9
37-2021 Pest control workers	Moderate-term on-the-job training	HS/SC	60.2	34.4	5.4
53-3022 Bus drivers, school	Short-term on-the-job training	HS/SC	63.9	29.2	7.0
35-1012 First-line supervisors/managers of food preparation and serving workers	Work experience in a related occupation	HS/SC	56.2	30.3	13.5
39-6012 Concierges ²	Moderate-term on-the-job training	HS/SC	51.9	36.1	12.0
49-9091 Coin, vending, and amusement machine servicers and repairers	Moderate-term on-the-job training	HS/SC	62.6	32.3	5.1
53-6099 All other related transportation workers ²	Short-term on-the-job training	HS/SC	44.5	49.2	6.3
49-2096 Electronic equipment installers and repairers, motor vehicles	Postsecondary vocational award	HS/SC	37.9	59.6	2.5
43-5111 Weighers, measurers, checkers, and samplers, recordkeeping	Short-term on-the-job training	HS/SC	56.4	30.6	13.0
43-3041 Gaming cage workers ⁷	Short-term on-the-job training	HS/SC	43.6	42.5	13.9
31-1013 Psychiatric aides	Short-term on-the-job training	HS/SC	62.7	31.4	5.9
33-9011 Animal control workers ⁷	Moderate-term on-the-job training	HS/SC	53.7	32.6	13.6
43-4031 Court, municipal, and license clerks	Short-term on-the-job training	HS/SC	39.9	46.1	14.0
51-9199 All other production workers	Moderate-term on-the-job training	HS/SC	74.3	21.0	4.7
51-3011 Bakers	Long-term on-the-job training	HS/SC	73.5	20.5	6.0
43-4141 New accounts clerks ²	Work experience in a related occupation	HS/SC	41.0	43.0	16.0
27-2031 Dancers ³	Long-term on-the-job training	HS/SC	57.5	33.5	9.0
43-9061 Office clerks, general	Short-term on-the-job training	HS/SC	40.9	42.4	16.7
53-7199 Material moving workers, all other	Moderate-term on-the-job training	HS/SC	73.7	22.3	4.1
43-3071 Tellers	Short-term on-the-job training	HS/SC	44.3	42.9	12.7
51-7011 Cabinetmakers and bench carpenters	Long-term on-the-job training	HS/SC	69.0	23.3	7.7
51-9121 Coating, painting, and spraying machine setters, operators, and tenders	Moderate-term on-the-job training	HS/SC	76.7	20.8	2.5
51-5099 All other printing workers	Moderate-term on-the-job training	HS/SC	70.6	25.3	4.1
51-9083 Ophthalmic laboratory technicians	Moderate-term on-the-job training	HS/SC	51.8	34.6	13.6
51-9022 Grinding and polishing workers, hand	Moderate-term on-the-job training	HS/SC	67.9	28.6	3.6
51-4072 Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	Moderate-term on-the-job training	HS/SC	71.4	25.7	2.9
49-2097 Electronic home entertainment equipment installers and repairers	Postsecondary vocational award	HS/SC	59.4	33.4	7.1
43-3021 Billing and posting clerks and machine operators	Moderate-term on-the-job training	HS/SC	39.3	43.9	16.8
49-3041 Farm equipment mechanics	Postsecondary vocational award	HS/SC	63.2	31.1	5.7
51-4021 Extruding and drawing machine setters, operators, and tenders, metal and plastic	Moderate-term on-the-job training	HS/SC	76.3	23.6	.1
51-4031 Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	Moderate-term on-the-job training	HS/SC	72.4	26.1	1.5
53-7062 Laborers and freight, stock, and material movers, hand	Short-term on-the-job training	HS/SC	73.8	21.7	4.5
51-9194 Etchers and engravers ²	Long-term on-the-job training	HS/SC	63.1	25.3	11.6
51-4022 Forging machine setters, operators, and tenders, metal and plastic ²	Moderate-term on-the-job training	HS/SC	76.6	23.4	.0
29-2053 Psychiatric technicians	Moderate-term on-the-job training	HS/SC	33.7	54.0	12.3
51-2091 Fiberglass laminators and fabricators	Moderate-term on-the-job training	HS/SC	73.8	21.2	5.0
51-9061 Inspectors, testers, sorters, samplers, and weighers	Moderate-term on-the-job training	HS/SC	52.9	33.7	13.4
51-9071 Jewelers and precious stone and metal workers	Postsecondary vocational award	HS/SC	61.5	24.8	13.7
53-3031 Driver/sales workers	Short-term on-the-job training	HS/SC	70.9	24.2	4.9
51-4071 Foundry mold and coremakers ²	Moderate-term on-the-job training	HS/SC	74.9	21.5	3.5
49-9064 Watch repairers ⁴	Long-term on-the-job training	HS/SC	36.0	49.0	15.0
43-5071 Shipping, receiving, and traffic clerks	Short-term on-the-job training	HS/SC	64.5	28.6	6.9
43-2011 Switchboard operators, including answering service	Short-term on-the-job training	HS/SC	54.6	34.0	11.4

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numeric	Percent	
\$24,820	L	30	36	6	18.9	49-3053 Outdoor power equipment and other small engine mechanics
27,100	L	15	18	3	18.7	49-3052 Motorcycle mechanics ³
24,730	L	2	2	0	18.2	39-5091 Makeup artists, theatrical and performance ⁴
25,600	L	63	75	11	18.2	29-2081 Opticians, dispensing
22,960	L	36	43	7	18.1	31-9093 Medical equipment preparers
21,200	L	34	40	6	17.6	51-9123 Painting, coating, and decorating workers
25,430	L	339	398	58	17.2	43-6013 Medical secretaries
24,760	L	62	72	10	17.0	37-2021 Pest control workers
22,390	L	453	528	76	16.7	53-3022 Bus drivers, school
24,390	L	692	800	107	15.5	35-1012 First-line supervisors/managers of food preparation and serving workers
21,720	L	17	20	3	15.3	39-6012 Concierges ²
27,380	L	43	49	6	15.2	49-9091 Coin, vending, and amusement machine servicers and repairers
26,600	L	40	47	6	15.2	53-6099 All other related transportation workers ²
26,010	L	18	21	3	14.8	49-2096 Electronic equipment installers and repairers, motor vehicles
24,170	L	81	93	12	14.6	43-5111 Weighers, measurers, checkers, and samplers, recordkeeping
21,780	L	18	21	3	14.5	43-3041 Gaming cage workers ⁷
22,970	L	59	68	9	14.5	31-1013 Psychiatric aides
24,780	L	11	12	1	12.6	33-9011 Animal control workers ⁷
27,300	L	106	119	13	12.3	43-4031 Court, municipal, and license clerks
22,260	L	449	500	51	11.3	51-9199 All other production workers
20,580	L	173	192	19	11.2	51-3011 Bakers
25,200	L	99	110	11	11.2	43-4141 New accounts clerks ²
21,100	L	20	22	2	11.1	27-2031 Dancers ³
22,280	L	2,991	3,301	310	10.4	43-9061 Office clerks, general
25,070	L	78	86	8	10.0	53-7199 Material moving workers, all other
20,400	L	530	580	50	9.4	43-3071 Tellers
24,000	L	147	160	14	9.4	51-7011 Cabinetmakers and bench carpenters
25,290	L	103	112	10	9.4	51-9121 Coating, painting, and spraying machine setters, operators, and tenders
23,330	L	21	23	2	9.3	51-5099 All other printing workers
21,760	L	33	36	3	9.2	51-9083 Ophthalmic laboratory technicians
22,970	L	45	49	4	9.0	51-9022 Grinding and polishing workers, hand
23,230	L	151	165	14	8.9	51-4072 Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic
27,200	L	43	46	4	8.6	49-2097 Electronic home entertainment equipment installers and repairers
26,110	L	507	547	40	7.9	43-3021 Billing and posting clerks and machine operators
27,100	L	35	38	3	7.7	49-3041 Farm equipment mechanics
25,870	L	98	105	7	7.1	51-4021 Extruding and drawing machine setters, operators, and tenders, metal and plastic
24,570	L	283	302	19	6.8	51-4031 Cutting, punching, and press machine setters, operators, and tenders, metal and plastic
19,710	L	2,231	2,378	147	6.6	53-7062 Laborers and freight, stock, and material movers, hand
22,450	L	10	10	1	6.2	51-9194 Etchers and engravers ²
26,300	L	45	48	3	6.0	51-4022 Forging machine setters, operators, and tenders, metal and plastic ²
25,710	L	60	63	4	5.9	29-2053 Psychiatric technicians
24,610	L	37	39	2	5.6	51-2091 Fiberglass laminators and fabricators
27,060	L	515	539	24	4.7	51-9061 Inspectors, testers, sorters, samplers, and weighers
26,260	L	40	42	2	4.5	51-9071 Jewelers and precious stone and metal workers
20,640	L	431	450	19	4.3	53-3031 Driver/sales workers
26,100	L	23	24	1	3.6	51-4071 Foundry mold and coremakers ²
26,560	L	5	5	0	3.5	49-9064 Watch repairers ⁴
23,420	L	803	827	24	3.0	43-5071 Shipping, receiving, and traffic clerks
21,190	L	236	236	1	.2	43-2011 Switchboard operators, including answering service

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
51-9041 Extruding, forming, pressing, and compacting machine setters, operators, and tenders	Moderate-term on-the-job training	HS/SC	69.5	26.0	4.5
51-2099 All other assemblers and fabricators	Moderate-term on-the-job training	HS/SC	73.8	21.2	5.0
43-4071 File clerks	Short-term on-the-job training	HS/SC	44.7	40.5	14.8
43-4021 Correspondence clerks ⁷	Short-term on-the-job training	HS/SC	44.3	41.0	14.7
51-2092 Team assemblers	Moderate-term on-the-job training	HS/SC	73.8	21.2	5.0
41-2022 Parts salespersons	Moderate-term on-the-job training	HS/SC	67.3	27.8	4.9
49-9093 Fabric menders, except garment ⁴	Moderate-term on-the-job training	HS/SC	62.3	25.6	12.1
51-9021 Crushing, grinding, and polishing machine setters, operators, and tenders	Moderate-term on-the-job training	HS/SC	67.9	28.6	3.6
43-6014 Secretaries, except legal, medical, and executive	Moderate-term on-the-job training	HS/SC	37.2	47.0	15.9
43-9051 Mail clerks and mail machine operators, except postal service	Short-term on-the-job training	HS/SC	56.9	36.0	7.1
51-2093 Timing device assemblers, adjusters, and calibrators ⁴	Moderate-term on-the-job training	HS/SC	73.8	21.2	5.0
43-9071 Office machine operators, except computer	Short-term on-the-job training	HS/SC	58.3	31.9	9.9
51-5011 Bindery workers	Short-term on-the-job training	HS/SC	70.4	21.5	8.1
43-9021 Data entry keyers	Moderate-term on-the-job training	HS/SC	45.1	41.0	13.9
43-4151 Order clerks	Short-term on-the-job training	HS/SC	51.6	36.5	11.8
43-4041 Credit authorizers, checkers, and clerks	Short-term on-the-job training	HS/SC	33.0	48.9	18.1
43-5199 All other material recording, scheduling, dispatching, and distributing workers	Short-term on-the-job training	HS/SC	65.4	26.0	8.6
51-2023 Electromechanical equipment assemblers	Short-term on-the-job training	HS/SC	72.6	21.6	5.8
51-6052 Tailors, dressmakers, and custom sewers	Long-term on-the-job training	HS/SC	63.1	24.2	12.7
51-9141 Semiconductor processors ⁷	Associate degree	HS/SC	68.7	23.9	7.5
51-2021 Coil winders, tapers, and finishers	Short-term on-the-job training	HS/SC	72.6	21.6	5.8
51-2022 Electrical and electronic equipment assemblers	Short-term on-the-job training	HS/SC	72.6	21.6	5.8
11-9012 Farmers and ranchers	Long-term on-the-job training	HS/SC	54.7	28.7	16.6
43-9022 Word processors and typists	Moderate-term on-the-job training	HS/SC	37.6	48.2	14.2
31-1011 Home health aides	Short-term on-the-job training	HS/SC	62.7	31.4	5.9
39-9021 Personal and home care aides	Short-term on-the-job training	HS/SC	59.6	32.1	8.2
33-5032 Security guards	Short-term on-the-job training	HS/SC	52.5	34.7	12.8
39-3091 Amusement and recreation attendants	Short-term on-the-job training	HS/SC	45.8	40.5	13.7
53-3011 Ambulance drivers and attendants, except emergency medical technicians ⁷	Moderate-term on-the-job training	HS/SC	69.5	24.9	5.6
39-3093 Locker room, coatroom, and dressing room attendants ³	Short-term on-the-job training	HS/SC	56.9	34.0	9.1
31-9096 Veterinary assistants and laboratory animal caretakers	Short-term on-the-job training	HS/SC	36.6	49.8	13.5
39-3011 Gaming dealers	Postsecondary vocational award	HS/SC	51.4	35.3	13.3
39-3012 Gaming and sports book writers and runners ⁴	Postsecondary vocational award	HS/SC	51.4	35.3	13.3
41-2012 Gaming change persons and booth cashiers ²	Short-term on-the-job training	HS/SC	66.7	24.7	8.6
43-4081 Hotel, motel, and resort desk clerks	Short-term on-the-job training	HS/SC	45.3	38.8	16.0
25-9041 Teacher assistants	Short-term on-the-job training	HS/SC	43.7	40.0	16.3
39-5092 Manicurists and pedicurists	Postsecondary vocational award	HS/SC	58.6	32.8	8.7
39-2021 Nonfarm animal caretakers	Short-term on-the-job training	HS/SC	55.6	31.7	12.7
53-3041 Taxi drivers and chauffeurs	Short-term on-the-job training	HS/SC	60.9	25.9	13.2
39-3199 All other gaming service workers	Moderate-term on-the-job training	HS/SC	51.4	35.3	13.3
31-9095 Pharmacy aides	Short-term on-the-job training	HS/SC	36.6	49.8	13.5
35-3031 Waiters and waitresses	Short-term on-the-job training	HS/SC	55.2	32.3	12.5
35-3022 Counter attendants, cafeteria, food concession, and coffee shop	Short-term on-the-job training	HS/SC	72.0	20.1	7.9
39-5093 Shampooers	Short-term on-the-job training	HS/SC	58.6	32.8	8.7
33-9091 Crossing guards	Short-term on-the-job training	HS/SC	76.0	23.3	.6
35-9031 Hosts and hostesses, restaurant, lounge, and coffee shop	Short-term on-the-job training	HS/SC	48.1	32.3	19.6
39-3031 Ushers, lobby attendants, and ticket takers ²	Short-term on-the-job training	HS/SC	49.8	30.9	19.3
39-5012 Hairdressers, hairstylists, and cosmetologists	Postsecondary vocational award	HS/SC	55.7	40.2	4.1
39-6011 Baggage porters and bellhops	Short-term on-the-job training	HS/SC	44.5	45.8	9.6
41-2011 Cashiers, except gaming	Short-term on-the-job training	HS/SC	66.1	25.6	8.3
39-9011 Child care workers	Short-term on-the-job training	HS/SC	52.9	34.4	12.7

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numeric	Percent	
\$26,540	L	73	73	0	-.1	51-9041 Extruding, forming, pressing, and compacting machine setters, operators, and tenders
22,890	L	361	360	-1	-.2	51-2099 All other assemblers and fabricators
20,020	L	265	264	-1	-.3	43-4071 File clerks
25,960	L	33	33	0	-1.4	43-4021 Correspondence clerks ⁷
22,680	L	1,174	1,155	-19	-1.6	51-2092 Team assemblers
23,950	L	248	243	-5	-2.0	41-2022 Parts salespersons
25,690	L	2	2	0	-2.2	49-9093 Fabric menders, except garment ⁴
26,690	L	45	44	-1	-2.8	51-9021 Crushing, grinding, and polishing machine setters, operators, and tenders
25,290	L	1,975	1,918	-57	-2.9	43-6014 Secretaries, except legal, medical, and executive
21,190	L	170	165	-5	-2.9	43-9051 Mail clerks and mail machine operators, except postal service
24,190	L	7	6	0	-3.0	51-2093 Timing device assemblers, adjusters, and calibrators ⁴
21,770	L	96	91	-4	-4.6	43-9071 Office machine operators, except computer
21,860	L	91	86	-5	-5.2	51-5011 Bindery workers
22,390	L	392	371	-21	-5.4	43-9021 Data entry keyers
24,810	L	330	311	-19	-5.7	43-4151 Order clerks
26,690	L	80	74	-5	-6.7	43-4041 Credit authorizers, checkers, and clerks
25,890	L	34	32	-2	-6.9	43-5199 All other material recording, scheduling, dispatching, and distributing workers
25,260	L	60	55	-5	-8.3	51-2023 Electromechanical equipment assemblers
22,220	L	53	48	-5	-9.1	51-6052 Tailors, dressmakers, and custom sewers
27,340	L	46	42	-5	-10.6	51-9141 Semiconductor processors ⁷
23,020	L	36	31	-5	-13.9	51-2021 Coil winders, tapers, and finishers
22,940	L	281	230	-51	-18.3	51-2022 Electrical and electronic equipment assemblers
24,076	L	1,158	920	-238	-20.6	11-9012 Farmers and ranchers
26,730	L	241	148	-93	-38.6	43-9022 Word processors and typists
18,090	VL	580	859	279	48.1	31-1011 Home health aides
16,250	VL	608	854	246	40.5	39-9021 Personal and home care aides
19,140	VL	995	1,313	317	31.8	33-9032 Security guards
14,920	VL	234	299	65	27.8	39-3091 Amusement and recreation attendants
19,100	VL	17	22	5	26.7	53-3011 Ambulance drivers and attendants, except emergency medical technicians ⁷
16,930	VL	23	29	6	26.5	39-3093 Locker room, coatroom, and dressing room attendants ³
17,790	VL	63	79	16	26.2	31-9096 Veterinary assistants and laboratory animal caretakers
14,090	VL	78	97	19	24.7	39-3011 Gaming dealers
18,660	VL	14	18	3	24.4	39-3012 Gaming and sports book writers and runners ⁴
19,600	VL	33	41	8	24.1	41-2012 Gaming change persons and booth cashiers ²
17,370	VL	178	220	42	23.9	43-4081 Hotel, motel, and resort desk clerks
18,660	VL	1,277	1,571	294	23.0	25-9041 Teacher assistants
17,330	VL	51	63	12	22.7	39-5092 Manicurists and pedicurists
17,080	VL	125	153	28	22.2	39-2021 Nonfarm animal caretakers
18,530	VL	132	161	29	21.7	53-3041 Taxi drivers and chauffeurs
17,970	VL	40	49	9	21.3	39-3199 All other gaming service workers
18,430	VL	60	71	11	17.6	31-9095 Pharmacy aides
14,150	VL	2,097	2,464	367	17.5	35-3031 Waiters and waitresses
15,230	VL	467	545	78	16.7	35-3022 Counter attendants, cafeteria, food concession, and coffee shop
14,360	VL	25	29	4	16.6	39-5093 Shampoos
18,680	VL	74	86	12	16.5	33-9091 Crossing guards
15,310	VL	298	347	49	16.4	35-9031 Hosts and hostesses, restaurant, lounge, and coffee shop
14,600	VL	105	121	16	15.5	39-3031 Ushers, lobby attendants, and ticket takers ²
18,960	VL	585	671	86	14.7	39-5012 Hairdressers, hairstylists, and cosmetologists
17,860	VL	58	67	8	14.4	39-6011 Baggage porters and bellhops
15,420	VL	3,432	3,886	454	13.2	41-2011 Cashiers, except gaming
16,370	VL	1,211	1,353	142	11.7	39-9011 Child care workers

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation		Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
				High school or less	Some college	College or higher
35-3041	Food servers, nonrestaurant	Short-term on-the-job training	HS/SC	70.2	24.1	5.6
35-3011	Bartenders	Short-term on-the-job training	HS/SC	49.2	37.9	12.9
39-5011	Barbers	Postsecondary vocational award	HS/SC	59.7	38.6	1.7
43-5021	Couriers and messengers	Short-term on-the-job training	HS/SC	53.2	36.6	10.2
53-6031	Service station attendants	Short-term on-the-job training	HS/SC	67.8	26.4	5.9
39-3021	Motion picture projectionists ⁷	Short-term on-the-job training	HS/SC	56.4	33.4	10.2
43-5081	Stock clerks and order fillers	Short-term on-the-job training	HS/SC	65.4	26.0	8.6
41-9041	Telemarketers	Short-term on-the-job training	HS/SC	54.8	33.6	11.6
51-6041	Shoe and leather workers and repairers ²	Long-term on-the-job training	HS/SC	70.2	20.3	9.5
51-6051	Sewers, hand	Short-term on-the-job training	HS/SC	63.1	24.2	12.7
31-2011	Occupational therapist assistants ⁷	Associate degree	SC	19.9	63.0	17.1
31-2012	Occupational therapist aides ⁷	Short-term on-the-job training	SC	19.9	63.0	17.1
11-3011	Administrative services managers	Bachelor's plus experience ⁹	HS/SC/C	22.6	36.8	40.6
11-3071	Transportation, storage, and distribution managers	Work experience in a related occupation	HS/SC/C	49.0	28.8	22.2
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products	Moderate-term on-the-job training	HS/SC/C	24.5	27.0	48.5
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products	Moderate-term on-the-job training	HS/SC/C	24.5	27.0	48.5
33-1011	First-line supervisors/managers of correctional officers	Work experience in a related occupation	HS/SC/C	27.7	46.6	25.8
29-2091	Orthotists and prosthetists ⁴	Bachelor's degree	HS/SC/C	31.0	47.0	22.0
13-1051	Cost estimators	Work experience in a related occupation	HS/SC/C	32.8	38.4	28.8
11-1021	General and operations managers	Bachelor's plus experience ⁹	HS/SC/C	21.3	30.4	48.4
13-2099	All other financial specialists	Bachelor's degree	HS/SC/C	25.2	29.6	45.2
39-6031	Flight attendants	Long-term on-the-job training	HS/SC/C	25.3	37.9	36.7
33-3052	Transit and railroad police ⁷	Long-term on-the-job training	HS/SC/C	21.0	52.1	26.9
13-1031	Claims adjusters, examiners, and investigators	Long-term on-the-job training	HS/SC/C	24.1	32.2	43.7
11-9021	Construction managers	Bachelor's degree	HS/SC/C	41.4	30.6	28.0
13-1032	Insurance appraisers, auto damage	Long-term on-the-job training	HS/SC/C	24.1	32.2	43.7
13-1023	Purchasing agents, except wholesale, retail, and farm products	Work experience in a related occupation	HS/SC/C	29.4	33.7	36.9
13-2053	Insurance underwriters	Bachelor's degree	HS/SC/C	21.3	25.8	53.0
19-1010	Agricultural and food scientists	Bachelor's degree	HS/SC/C	25.7	12.0	62.3
11-3051	Industrial production managers	Bachelor's degree	HS/SC/C	29.8	29.7	40.5
41-1012	First-line supervisors/managers of non-retail sales workers	Work experience in a related occupation	HS/SC/C	34.9	28.7	36.4
11-9199	All other managers	Work experience in a related occupation	HS/SC/C	24.7	27.3	48.0
11-9011	Farm, ranch, and other agricultural managers	Bachelor's plus experience ⁹	HS/SC/C	48.0	30.6	21.4
41-9021	Real estate brokers	Work experience in a related occupation	HS/SC/C	22.2	37.0	40.7
19-4051	Nuclear technicians ⁷	Associate degree	HS/SC/C	26.8	39.0	34.2
11-9131	Postmasters and mail superintendents	Work experience in a related occupation	HS/SC/C	21.3	30.4	48.4
19-4091	Environmental science and protection technicians, including health	Associate degree	HS/SC/C	20.7	33.6	45.7
25-2012	Kindergarten teachers, except special education	Bachelor's degree	HS/SC/C	21.7	31.0	47.2
29-9199	All other health practitioners and technical workers	Postsecondary vocational award	HS/SC/C	31.0	47.0	22.0
27-4011	Audio and video equipment technicians	Long-term on-the-job training	HS/SC/C	22.7	40.9	36.4
27-4014	Sound engineering technicians ²	Postsecondary vocational award	HS/SC/C	25.0	41.7	33.3
41-9098	All other sales and related workers	Moderate-term on-the-job training	HS/SC/C	22.4	30.5	47.1
33-1099	All other first-line supervisors/managers, protective service workers	Work experience in a related occupation	HS/SC/C	31.1	46.2	22.8
19-4021	Biological technicians	Associate degree	HS/SC/C	24.6	16.4	59.0
43-4161	Human resources assistants, except payroll and timekeeping	Short-term on-the-job training	HS/SC/C	28.8	48.8	22.4
19-4092	Forensic science technicians ⁴	Associate degree	HS/SC/C	20.7	33.6	45.7
29-1031	Dietitians and nutritionists	Bachelor's degree	HS/SC/C	28.9	13.6	57.5
19-4098	All other life, physical, and social science technicians	Associate degree	HS/SC/C	20.7	33.6	45.7
27-2042	Musicians and singers	Long-term on-the-job training	HS/SC/C	21.0	26.1	52.9
27-2099	All other entertainers and performers, sports and related workers	Long-term on-the-job training	HS/SC/C	34.4	25.4	40.2
39-1011	Gaming supervisors	Work experience in a related occupation	HS/SC/C	35.4	31.5	33.1

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation	
Dollars	Rank ¹¹	2002	2012	Numeric	Percent		
\$15,640	VL	195	215	20	10.4	35-3041	Food servers, nonrestaurant
15,000	VL	463	503	40	8.6	35-3011	Bar tenders
19,550	VL	66	70	4	6.4	39-5011	Barbers
19,390	VL	132	138	5	4.0	43-5021	Couriers and messengers
16,570	VL	107	111	4	3.3	53-6031	Service station attendants
16,580	VL	9	9	0	.4	39-3021	Motion picture projectionists ⁷
19,270	VL	1,628	1,560	-68	-4.2	43-5081	Stock clerks and order fillers
19,550	VL	428	406	-21	-4.9	41-9041	Telemarketers
19,010	VL	16	14	-3	-16.1	51-6041	Shoe and leather workers and repairers ²
18,070	VL	36	29	-8	-21.2	51-6051	Sewers, hand
36,660	H	18	26	7	39.2	31-2011	Occupational therapist assistants ⁷
22,040	L	8	12	4	42.6	31-2012	Occupational therapist aides ⁷
52,500	VH	321	384	63	19.8	11-3011	Administrative services managers
59,660	VH	111	133	22	19.7	11-3071	Transportation, storage, and distribution managers
55,740	VH	398	475	77	19.3	41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products
42,730	VH	1,459	1,738	279	19.2	41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products
44,940	VH	33	40	6	19.0	33-1011	First-line supervisors/managers of correctional officers
46,260	VH	5	6	1	18.9	29-2091	Orthotists and prosthetists ⁴
47,550	VH	188	223	35	18.6	13-1051	Cost estimators
68,210	VH	2,049	2,425	376	18.4	11-1021	General and operations managers
44,140	VH	162	190	28	17.6	13-2099	All other financial specialists
43,140	VH	104	121	17	16.0	39-6031	Flight attendants
43,710	VH	6	7	1	15.9	33-3052	Transit and railroad police ⁷
43,020	VH	227	260	32	14.2	13-1031	Claims adjusters, examiners, and investigators
63,500	VH	389	435	47	12.0	11-9021	Construction managers
42,630	VH	14	16	2	11.7	13-1032	Insurance appraisers, auto damage
45,090	VH	245	273	27	11.2	13-1023	Purchasing agents, except wholesale, retail, and farm products
45,590	VH	102	112	10	10.0	13-2053	Insurance underwriters
48,670	VH	18	20	2	9.1	19-1010	Agricultural and food scientists
67,320	VH	182	197	14	7.9	11-3051	Industrial production managers
53,020	VH	597	637	41	6.8	41-1012	First-line supervisors/managers of non-retail sales workers
66,890	VH	1,256	1,325	69	5.5	11-9199	All other managers
43,740	VH	218	229	11	5.1	11-9011	Farm, ranch, and other agricultural managers
50,330	VH	99	101	2	2.4	41-9021	Real estate brokers
59,990	VH	6	6	0	1.5	19-4051	Nuclear technicians ⁷
48,540	VH	25	25	0	-.5	11-9131	Postmasters and mail superintendents
35,320	H	28	38	10	36.8	19-4091	Environmental science and protection technicians, including health
39,810	H	168	214	46	27.2	25-2012	Kindergarten teachers, except special education
31,690	H	190	241	52	27.2	29-9199	All other health practitioners and technical workers
31,110	H	42	53	11	26.8	27-4011	Audio and video equipment technicians
36,970	H	13	16	3	25.5	27-4014	Sound engineering technicians ²
35,170	H	577	717	140	24.3	41-9098	All other sales and related workers
34,320	H	56	70	13	23.9	33-1099	All other first-line supervisors/managers, protective service workers
32,710	H	48	57	9	19.4	19-4021	Biological technicians
30,410	H	174	207	33	19.2	43-4161	Human resources assistants, except payroll and timekeeping
41,040	H	8	10	2	18.9	19-4092	Forensic science technicians ⁴
41,170	H	49	58	9	17.8	29-1031	Dietitians and nutritionists
34,030	H	137	162	24	17.5	19-4098	All other life, physical, and social science technicians
36,290	H	161	189	27	17.1	27-2042	Musicians and singers
33,740	H	56	65	9	16.4	27-2099	All other entertainers and performers, sports and related workers
39,290	H	39	45	6	15.7	39-1011	Gaming supervisors

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁶	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
49-2011 Computer, automated teller, and office machine repairers	Postsecondary vocational award	HS/SC/C	27.6	50.3	22.0
43-5061 Production, planning, and expediting clerks	Short-term on-the-job training	HS/SC/C	37.0	35.2	27.8
47-4011 Construction and building inspectors	Work experience in a related occupation	HS/SC/C	35.6	41.9	22.4
27-2041 Music directors and composers	Bachelor's plus experience ⁹	HS/SC/C	21.0	26.1	52.9
41-3011 Advertising sales agents	Moderate-term on-the-job training	HS/SC/C	20.6	28.6	50.8
11-9141 Property, real estate, and community association managers	Bachelor's degree	HS/SC/C	29.1	33.3	37.7
23-2091 Court reporters	Postsecondary vocational award	HS/SC/C	25.2	41.1	33.6
11-9051 Food service managers	Work experience in a related occupation	HS/SC/C	42.9	32.6	24.4
33-3041 Parking enforcement workers ⁷	Short-term on-the-job training	HS/SC/C	28.7	47.3	24.0
27-4012 Broadcast technicians	Associate degree	HS/SC/C	22.7	40.9	36.4
13-1021 Purchasing agents and buyers, farm products ²	Work experience in a related occupation	HS/SC/C	55.3	20.1	24.6
19-4011 Agricultural and food science technicians	Associate degree	HS/SC/C	34.4	26.4	39.3
41-1011 First-line supervisors/managers of retail sales workers	Work experience in a related occupation	HS/SC/C	41.1	34.4	24.5
41-3021 Insurance sales agents	Bachelor's degree	HS/SC/C	22.6	34.0	43.4
39-4011 Embalmers ⁸	Postsecondary vocational award	HS/SC/C	37.1	42.3	20.6
23-9099 All other legal and related workers	Bachelor's degree	HS/SC/C	25.2	41.1	33.6
33-3031 Fish and game wardens ⁷	Long-term on-the-job training	HS/SC/C	28.7	47.3	24.0
45-2011 Agricultural inspectors ²	Work experience in a related occupation	HS/SC/C	36.6	31.4	32.0
43-1011 First-line supervisors/managers of office and administrative support workers	Work experience in a related occupation	HS/SC/C	33.1	39.5	27.3
11-9081 Lodging managers	Work experience in a related occupation	HS/SC/C	30.6	21.9	47.5
41-9022 Real estate sales agents	Postsecondary vocational award	HS/SC/C	22.2	37.0	40.7
19-4031 Chemical technicians	Associate degree	HS/SC/C	31.7	39.7	28.7
13-1022 Wholesale and retail buyers, except farm products	Work experience in a related occupation	HS/SC/C	30.4	34.6	35.0
19-4093 Forest and conservation technicians ²	Associate degree	HS/SC/C	23.2	36.7	40.1
23-2092 Law clerks	Bachelor's degree	HS/SC/C	25.2	41.1	33.6
19-4041 Geological and petroleum technicians ²	Associate degree	HS/SC/C	29.2	43.5	27.3
43-4999 All other financial, information, and record clerks	Short-term on-the-job training	HS/SC/C	26.8	50.3	22.9
23-2093 Title examiners, abstractors, and searchers	Moderate-term on-the-job training	HS/SC/C	25.2	41.1	33.6
27-4013 Radio operators ⁴	Moderate-term on-the-job training	HS/SC/C	22.7	40.9	36.4
43-9111 Statistical assistants ²	Moderate-term on-the-job training	HS/SC/C	35.6	35.8	28.6
43-4061 Eligibility interviewers, government programs	Moderate-term on-the-job training	HS/SC/C	20.4	50.8	28.8
43-4131 Loan interviewers and clerks	Short-term on-the-job training	HS/SC/C	33.3	42.8	23.9
43-4011 Brokerage clerks ²	Moderate-term on-the-job training	HS/SC/C	31.7	40.4	27.9
43-9011 Computer operators	Moderate-term on-the-job training	HS/SC/C	39.1	40.5	20.4
39-9031 Fitness trainers and aerobics instructors	Postsecondary vocational award	HS/SC/C	22.0	30.6	47.4
39-9041 Residential advisors	Moderate-term on-the-job training	HS/SC/C	31.8	43.2	24.9
43-4051 Customer service representatives	Moderate-term on-the-job training	HS/SC/C	38.3	40.3	21.4
41-9011 Demonstrators and product promoters	Moderate-term on-the-job training	HS/SC/C	26.5	38.3	35.2
25-4031 Library technicians ²	Short-term on-the-job training	HS/SC/C	23.0	34.6	42.3
39-1012 Slot key persons	Postsecondary vocational award	HS/SC/C	35.4	31.5	33.1
41-9012 Models ⁴	Moderate-term on-the-job training	HS/SC/C	26.5	38.3	35.2
33-9095 All other protective service workers	Short-term on-the-job training	HS/SC/C	39.9	37.0	23.1
39-2011 Animal trainers	Moderate-term on-the-job training	HS/SC/C	47.5	28.3	24.2
43-4181 Reservation and transportation ticket agents and travel clerks	Short-term on-the-job training	HS/SC/C	31.6	45.3	23.1
51-9131 Photographic process workers	Moderate-term on-the-job training	HS/SC/C	41.6	32.8	25.5
51-7042 Woodworking machine setters, operators, and tenders, except sawing	Moderate-term on-the-job training	HS/SC/C	66.5	11.5	22.0
51-7099 All other woodworkers	Moderate-term on-the-job training	HS/SC/C	56.9	22.7	20.4
39-6022 Travel guides ⁴	Moderate-term on-the-job training	HS/SC/C	41.7	23.7	34.7
43-9999 All other secretaries, administrative assistants, and other office support workers	Short-term on-the-job training	HS/SC/C	29.5	37.8	32.6
43-9081 Proofreaders and copy markers ²	Short-term on-the-job training	HS/SC/C	32.3	33.7	34.0
27-3010 Announcers	Long-term on-the-job training	HS/SC/C	45.3	31.6	23.0
41-9091 Door-to-door sales workers, news and street vendors, and related workers	Short-term on-the-job training	HS/SC/C	46.1	31.3	22.6

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numeric	Percent	
\$33,250	H	156	180	24	15.0	49-2011 Computer, automated teller, and office machine repairers
33,650	H	266	328	40	14.0	43-5061 Production, planning, and expediting clerks
41,620	H	84	95	12	13.8	47-4011 Construction and building inspectors
31,310	H	54	62	7	13.5	27-2041 Music directors and composers
37,670	H	157	178	21	13.4	41-3011 Advertising sales agents
36,880	H	293	330	37	12.6	11-9141 Property, real estate, and community association managers
41,550	H	18	20	2	12.7	23-2091 Court reporters
35,790	H	386	430	44	11.5	11-9051 Food service managers
28,110	H	11	12	1	11.5	33-3041 Parking enforcement workers ⁷
27,760	H	35	39	4	11.3	27-4012 Broadcast technicians
40,900	H	19	21	2	10.2	13-1021 Purchasing agents and buyers, farm products ²
28,580	H	20	22	2	9.3	19-4011 Agricultural and food science technicians
29,700	H	1,798	1,962	163	9.1	41-1011 First-line supervisors/managers of retail sales workers
40,750	H	381	413	32	8.4	41-3021 Insurance sales agents
34,240	H	7	7	1	8.3	39-4011 Embalmers ⁸
35,700	H	101	109	8	7.6	23-9099 All other legal and related workers
41,010	H	8	8	1	7.1	33-3031 Fish and game wardens ⁷
28,620	H	16	17	1	6.8	45-2011 Agricultural inspectors ²
38,820	H	1,459	1,555	96	6.6	43-1011 First-line supervisors/managers of office and administrative support workers
33,970	H	69	73	5	6.6	11-9081 Lodging managers
30,930	H	308	325	18	5.7	41-9022 Real estate sales agents
37,430	H	69	72	3	4.6	19-4031 Chemical technicians
40,780	H	155	162	7	4.3	13-1022 Wholesale and retail buyers, except farm products
30,980	H	19	20	1	4.0	19-4093 Forest and conservation technicians ²
30,460	H	48	50	2	3.8	23-2092 Law clerks
39,430	H	11	11	0	1.3	19-4041 Geological and petroleum technicians ²
30,030	H	304	306	2	.5	43-4999 All other financial, information, and record clerks
32,610	H	55	53	-1	-2.7	23-2093 Title examiners, abstractors, and searchers
31,530	H	3	3	0	-6.2	27-4013 Radio operators ⁴
29,470	H	23	22	-2	-7.2	43-9111 Statistical assistants ²
31,010	H	94	83	-11	-11.6	43-4061 Eligibility interviewers, government programs
27,830	H	170	146	-24	-14.3	43-4131 Loan interviewers and clerks
33,210	H	78	67	-11	-14.7	43-4011 Brokerage clerks ²
29,650	H	182	151	-30	-16.8	43-9011 Computer operators
23,950	L	183	264	81	44.4	39-9031 Fitness trainers and aerobics instructors
20,700	L	53	71	18	33.6	39-9041 Residential advisors
26,240	L	1,894	2,354	460	24.3	43-4051 Customer service representatives
20,380	L	175	204	30	17.0	41-9011 Demonstrators and product promoters
24,090	L	119	139	20	16.8	25-4031 Library technicians ²
22,870	L	21	24	3	14.8	39-1012 Slot key persons
21,400	L	5	5	1	14.5	41-9012 Models ⁴
23,410	L	237	271	34	14.3	33-9095 All other protective service workers
22,950	L	26	30	4	14.3	39-2011 Animal trainers
25,350	L	177	199	22	12.2	43-4181 Reservation and transportation ticket agents and travel clerks
20,220	L	28	30	2	5.4	51-9131 Photographic process workers
22,030	L	95	98	3	3.0	51-7042 Woodworking machine setters, operators, and tenders, except sawing
21,020	L	29	29	0	1.7	51-7099 All other woodworkers
26,110	L	6	6	0	-3	39-6022 Travel guides ⁴
25,840	L	435	431	-4	-0.9	43-9999 All other secretaries, administrative assistants, and other office support workers
24,280	L	27	26	-1	-4.8	43-9061 Proofreaders and copy makers ²
20,620	L	76	68	-8	-10.1	27-3010 Announcers
25,340	L	155	137	-18	-11.8	41-9091 Door-to-door sales workers, news and street vendors, and related workers

See footnotes at end of table.

Table 1-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
41-3041 Travel agents	Postsecondary vocational award	HS/SC/C	27.9	44.1	28.0
25-2011 Preschool teachers, except special education	Postsecondary vocational award	HS/SC/C	21.7	31.0	47.2
41-2021 Counter and rental clerks	Short-term on-the-job training	HS/SC/C	49.1	28.1	22.8
39-9099 Personal care and service workers, all other	Short-term on-the-job training	HS/SC/C	40.1	38.9	21.0
43-4121 Library assistants, clerical	Short-term on-the-job training	HS/SC/C	25.2	44.7	30.0
39-9032 Recreation workers	Bachelor's degree	HS/SC/C	22.0	30.6	47.4
39-6032 Transportation attendants, except flight attendants and baggage porters	Short-term on-the-job training	HS/SC/C	25.3	37.9	36.7
39-4021 Funeral attendants ⁶	Short-term on-the-job training	HS/SC/C	37.1	42.3	20.6
41-2031 Retail salespersons	Short-term on-the-job training	HS/SC/C	42.0	32.9	25.1
39-6021 Tour guides and escorts	Moderate-term on-the-job training	HS/SC/C	41.7	23.7	34.7
51-9132 Photographic processing machine operators	Short-term on-the-job training	HS/SC/C	41.6	32.8	25.5
15-1081 Network systems and data communications analysts ..	Bachelor's degree	SC/C	11.3	31.2	57.5
29-1071 Physician assistants	Bachelor's degree	SC/C	5.1	27.5	67.4
15-1061 Database administrators	Bachelor's degree	SC/C	9.8	23.0	67.1
29-2021 Dental hygienists	Associate degree	SC/C	5.3	62.6	32.1
15-1051 Computer systems analysts	Bachelor's degree	SC/C	10.4	27.2	62.4
15-1071 Network and computer systems administrators	Bachelor's degree	SC/C	11.1	38.8	50.2
15-1099 All other computer specialists	Associate degree	SC/C	10.4	27.2	62.4
11-3021 Computer and information systems managers	Bachelor's plus experience ⁹	SC/C	7.3	22.4	70.4
29-1124 Radiation therapists ³	Associate degree	SC/C	1.8	57.3	41.0
11-2022 Sales managers	Bachelor's plus experience ⁹	SC/C	9.7	23.2	67.2
15-1011 Computer and information scientists, research	Doctoral degree	SC/C	10.4	27.2	62.4
11-9111 Medical and health services managers	Bachelor's plus experience ⁹	SC/C	9.4	29.6	61.0
13-1061 Emergency management specialists ⁴	Work experience in a related occupation	SC/C	19.9	30.8	49.3
13-1072 Compensation, benefits, and job analysis specialists ..	Bachelor's degree	SC/C	15.8	28.5	55.7
13-1073 Training and development specialists	Bachelor's degree	SC/C	15.8	28.5	55.7
13-1198 All other business operations specialists	Bachelor's degree	SC/C	15.8	28.5	55.7
29-1111 Registered nurses	Associate degree	SC/C	1.8	40.1	58.1
27-3042 Technical writers	Bachelor's degree	SC/C	5.3	25.3	69.4
11-2011 Advertising and promotions managers	Bachelor's plus experience ⁹	SC/C	8.5	21.7	69.9
33-3051 Police and sheriff's patrol officers	Long-term on-the-job training	SC/C	18.8	53.4	27.8
29-2032 Diagnostic medical sonographers	Associate degree	SC/C	10.6	65.8	23.6
29-2033 Nuclear medicine technologists ²	Associate degree	SC/C	12.1	66.6	21.3
33-3021 Detectives and criminal investigators	Work experience in a related occupation	SC/C	9.4	35.0	55.6
11-2021 Marketing managers	Bachelor's plus experience ⁹	SC/C	9.7	23.2	67.2
11-3040 Human resources managers	Bachelor's plus experience ⁹	SC/C	13.4	25.8	60.8
29-2011 Medical and clinical laboratory technologists	Bachelor's degree	SC/C	14.8	35.5	49.7
27-2021 Athletes and sports competitors	Long-term on-the-job training	SC/C	14.8	25.5	59.7
13-2072 Loan officers	Bachelor's degree	SC/C	19.2	30.5	50.3
13-2041 Credit analysts	Bachelor's degree	SC/C	17.0	26.7	56.3
33-1021 First-line supervisors/managers of fire fighting and prevention workers	Work experience in a related occupation	SC/C	17.8	57.2	25.0
11-3031 Financial managers	Bachelor's plus experience ⁹	SC/C	14.4	24.3	61.3
27-2012 Producers and directors	Bachelor's plus experience ⁹	SC/C	4.8	21.9	73.3
11-1011 Chief executives	Bachelor's plus experience ⁹	SC/C	16.1	21.1	62.8
27-1014 Multi-media artists and animators	Bachelor's degree	SC/C	13.7	27.8	58.5
33-1012 First-line supervisors/managers of police and detectives	Work experience in a related occupation	SC/C	17.2	54.3	28.4
27-1021 Commercial and industrial designers	Bachelor's degree	SC/C	17.3	29.7	53.1
15-1021 Computer programmers	Bachelor's degree	SC/C	7.6	22.4	70.1
41-3031 Securities, commodities, and financial services sales agents	Bachelor's degree	SC/C	11.9	21.0	67.1
53-2021 Air traffic controllers	Long-term on-the-job training	SC/C	17.3	33.6	49.1
15-2090 Miscellaneous mathematical science occupations ⁷	Master's degree	SC/C	7.5	24.2	68.3
27-1011 Art directors	Bachelor's plus experience ⁹	SC/C	13.7	27.8	58.5
17-3099 All other drafters, engineering, and mapping technicians	Associate degree	SC/C	15.5	61.0	23.5
17-2112 Industrial engineers	Bachelor's degree	SC/C	5.1	26.5	68.3
27-1022 Fashion designers	Bachelor's degree	SC/C	17.3	29.7	53.1

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation	
Dollars	Rank ¹¹	2002	2012	Numeric	Percent		
\$26,630	L	118	102	-16	-13.8	41-3041	Travel agents
19,270	VL	424	577	153	36.2	25-2011	Preschool teachers, except special education
17,280	VL	436	550	114	26.2	41-2021	Counter and rental clerks
17,820	VL	134	168	35	25.9	39-9099	Personal care and service workers, all other
19,450	VL	120	146	26	21.5	43-4121	Library assistants, clerical
18,060	VL	302	364	62	20.5	39-9032	Recreation workers
						39-6032	Transportation attendants, except flight attendants and baggage porters
18,720	VL	26	31	5	18.9	39-4021	Funeral attendants ⁶
18,190	VL	26	31	5	18.9	41-2031	Retail salespersons
17,710	VL	4,076	4,672	596	14.6		
18,500	VL	36	40	4	11.0	39-6021	Tour guides and escorts
18,820	VL	54	59	5	9.2	51-9132	Photographic processing machine operators
58,420	VH	186	292	106	57.0	15-1081	Network systems and data communications analysts
64,670	VH	63	94	31	48.8	29-1071	Physician assistants
55,480	VH	110	159	49	44.2	15-1061	Database administrators
55,320	VH	148	212	64	43.1	29-2021	Dental hygienists
62,890	VH	468	653	184	39.4	15-1051	Computer systems analysts
54,810	VH	251	345	94	37.4	15-1071	Network and computer systems administrators
54,070	VH	192	262	70	36.5	15-1099	All other computer specialists
85,240	VH	284	387	103	36.1	11-3021	Computer and information systems managers
50,640	VH	14	18	4	31.6	29-1124	Radiation therapists ³
75,040	VH	343	448	105	30.5	11-2022	Sales managers
77,760	VH	23	30	7	30.0	15-1011	Computer and information scientists, research
61,370	VH	244	315	71	29.3	11-9111	Medical and health services managers
43,560	VH	11	14	3	28.2	13-1061	Emergency management specialists ⁴
45,100	VH	91	116	25	28.0	13-1072	Compensation, benefits, and job analysis specialists
42,800	VH	209	267	58	27.9	13-1073	Training and development specialists
50,680	VH	1,056	1,346	290	27.5	13-1198	All other business operations specialists
48,090	VH	2,284	2,908	623	27.3	29-1111	Registered nurses
50,580	VH	50	63	13	27.1	27-3042	Technical writers
57,130	VH	85	107	21	25.0	11-2011	Advertising and promotions managers
42,270	VH	619	772	153	24.7	33-3051	Police and sheriff's patrol officers
48,660	VH	37	45	9	24.0	29-2032	Diagnostic medical sonographers
48,750	VH	17	21	4	23.6	29-2033	Nuclear medicine technologists ²
51,410	VH	94	115	21	22.4	33-3021	Detectives and criminal investigators
78,250	VH	203	246	43	21.4	11-2021	Marketing managers
64,710	VH	202	242	39	19.4	11-3040	Human resources managers
42,910	VH	150	179	29	19.3	29-2011	Medical and clinical laboratory technologists
45,320	VH	15	18	3	19.2	27-2021	Athletes and sports competitors
43,980	VH	223	266	42	18.8	13-2072	Loan officers
42,910	VH	66	78	12	18.7	13-2041	Credit analysts
55,450	VH	63	74	12	18.7	33-1021	First-line supervisors/managers of fire fighting and prevention workers
73,340	VH	599	709	109	18.3	11-3031	Financial managers
46,240	VH	76	90	14	18.2	27-2012	Producers and directors
126,260	VH	553	645	93	16.8	11-1011	Chief executives
43,980	VH	75	87	12	15.8	27-1014	Multi-media artists and animators
						33-1012	First-line supervisors/managers of police and detectives
61,010	VH	114	131	17	15.2	27-1021	Commercial and industrial designers
52,260	VH	52	59	8	14.6	15-1021	Computer programmers
60,290	VH	499	571	73	14.6	41-3031	Securities, commodities, and financial services sales agents
60,990	VH	300	339	39	13.0		
91,600	VH	26	29	3	12.6	53-2021	Air traffic controllers
52,060	VH	7	8	1	11.8	15-2090	Miscellaneous mathematical science occupations ⁷
61,850	VH	51	56	6	11.4	27-1011	Art directors
						17-3099	All other drafters, engineering, and mapping technicians
44,450	VH	150	167	17	11.3	17-2112	Industrial engineers
62,150	VH	158	175	17	10.6	27-1022	Fashion designers
51,290	VH	15	16	2	10.6		

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
13-1041 Compliance officers, except agriculture, construction, health and safety, and transportation	Long-term on-the-job training	SC/C	11.9	30.8	57.3
13-2061 Financial examiners ⁷	Bachelor's degree	SC/C	11.3	23.4	65.3
17-2111 Health and safety engineers, except mining safety engineers and inspectors	Bachelor's degree	SC/C	5.1	26.5	68.3
11-9061 Funeral directors	Associate degree	SC/C	4.5	56.2	39.2
15-2031 Operations research analysts	Master's degree	SC/C	11.0	30.7	58.3
17-2061 Computer hardware engineers	Bachelor's degree	SC/C	5.9	25.5	68.6
13-2081 Tax examiners, collectors, and revenue agents	Bachelor's degree	SC/C	14.6	32.1	53.3
11-3061 Purchasing managers	Bachelor's plus experience ⁹	SC/C	15.0	31.0	54.0
19-1032 Foresters ²	Bachelor's degree	SC/C	9.7	23.2	67.1
19-1031 Conservation scientists ²	Bachelor's degree	SC/C	9.7	23.2	67.1
15-2021 Mathematicians ⁷	Master's degree	SC/C	7.5	24.2	68.3
31-2021 Physical therapist assistants	Associate degree	SC/C	16.0	61.5	22.5
25-3021 Self-enrichment education teachers	Work experience in a related occupation	SC/C	14.4	30.4	55.2
29-1126 Respiratory therapists	Associate degree	SC/C	4.8	67.6	27.6
25-3999 All other teachers, primary, secondary, and adult	Bachelor's degree	SC/C	14.4	30.4	55.2
29-2031 Cardiovascular technologists and technicians	Associate degree	SC/C	10.6	65.8	23.6
15-1041 Computer support specialists	Associate degree	SC/C	15.5	42.7	41.8
23-2011 Paralegals and legal assistants	Associate degree	SC/C	15.8	41.9	42.2
13-1071 Employment, recruitment, and placement specialists	Bachelor's degree	SC/C	15.8	28.5	55.7
31-9011 Massage therapists	Postsecondary vocational award	SC/C	17.7	47.0	35.3
27-4032 Film and video editors ³	Bachelor's degree	SC/C	15.0	34.9	50.1
33-9021 Private detectives and investigators	Work experience in a related occupation	SC/C	18.4	35.9	45.8
21-2021 Directors, religious activities and education	Bachelor's degree	SC/C	11.1	31.9	57.0
29-2034 Radiologic technologists and technicians	Associate degree	SC/C	10.6	65.8	23.6
27-3091 Interpreters and translators ²	Long-term on-the-job training	SC/C	16.4	30.9	52.8
27-1024 Graphic designers	Bachelor's degree	SC/C	17.3	29.7	53.1
21-1091 Health educators ²	Master's degree	SC/C	18.4	23.7	57.9
27-1025 Interior designers	Bachelor's degree	SC/C	17.3	29.7	53.1
13-1121 Meeting and convention planners	Bachelor's degree	SC/C	15.4	26.7	57.9
27-1027 Set and exhibit designers ²	Bachelor's degree	SC/C	19.8	31.8	48.4
25-3011 Adult literacy, remedial education, and GED teachers and instructors	Bachelor's degree	SC/C	14.4	30.4	55.2
27-4099 All other media and communication equipment workers ⁷	Moderate-term on-the-job training	SC/C	19.0	31.9	49.1
29-2012 Medical and clinical laboratory technicians	Associate degree	SC/C	14.8	35.5	49.7
27-2022 Coaches and scouts	Long-term on-the-job training	SC/C	14.8	25.5	59.7
13-2071 Loan counselors	Bachelor's degree	SC/C	19.2	30.5	50.3
13-2021 Appraisers and assessors of real estate	Postsecondary vocational award	SC/C	14.7	29.9	55.4
53-2022 Airfield operations specialists ⁴	Long-term on-the-job training	SC/C	17.3	33.6	49.1
27-3099 All other media and communication workers	Long-term on-the-job training	SC/C	13.8	32.5	53.7
27-1013 Fine artists, including painters, sculptors, and illustrators	Long-term on-the-job training	SC/C	13.7	27.8	58.5
21-1092 Probation officers and correctional treatment specialists	Bachelor's degree	SC/C	15.2	24.0	60.8
27-4031 Camera operators, television, video, and motion picture ²	Moderate-term on-the-job training	SC/C	14.5	28.2	57.3
27-1099 All other art and design workers	Bachelor's degree	SC/C	13.7	27.8	58.5
29-1125 Recreational therapists	Bachelor's degree	SC/C	12.5	22.3	65.2
17-3011 Architectural and civil drafters	Postsecondary vocational award	SC/C	15.5	61.0	23.5
17-3013 Mechanical drafters	Postsecondary vocational award	SC/C	15.5	61.0	23.5
17-3012 Electrical and electronics drafters	Postsecondary vocational award	SC/C	15.5	61.0	23.5
21-1093 Social and human service assistants	Moderate-term on-the-job training	SC/C	15.2	24.0	60.8
31-2022 Physical therapist aides	Short-term on-the-job training	SC/C	16.0	61.5	22.5
13-2082 Tax preparers	Moderate-term on-the-job training	SC/C	16.7	29.2	54.0
27-2011 Actors	Long-term on-the-job training	SC/C	4.0	29.6	66.4
27-2023 Umpires, referees, and other sports officials ²	Long-term on-the-job training	SC/C	16.3	22.9	60.8
27-4021 Photographers	Long-term on-the-job training	SC/C	19.4	27.4	53.1
27-1026 Merchandise displayers and window trimmers	Moderate-term on-the-job training	SC/C	17.3	29.7	53.1
27-1023 Floral designers	Moderate-term on-the-job training	SC/C	17.3	29.7	53.1

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numeric	Percent	
\$44,800	VH	158	173	15	9.8	13-1041 Compliance officers, except agriculture, construction, health and safety, and transportation
56,220	VH	25	27	2	8.9	13-2061 Financial examiners ⁷
58,010	VH	36	38	3	7.9	17-2111 Health and safety engineers, except mining safety engineers and inspectors
43,380	VH	24	26	2	6.6	11-9061 Funeral directors
56,920	VH	62	66	4	6.2	15-2031 Operations research analysts
72,150	VH	74	78	5	6.1	17-2061 Computer hardware engineers
42,250	VH	75	79	4	5.0	13-2081 Tax examiners, collectors, and revenue agents
59,890	VH	108	113	5	4.8	11-3061 Purchasing managers
46,730	VH	14	14	1	4.7	19-1032 Foresters ²
50,340	VH	19	20	1	4.1	19-1031 Conservation scientists ²
76,470	VH	3	3	0	-1.0	15-2021 Mathematicians ⁷
36,080	H	50	73	22	44.6	31-2021 Physical therapist assistants
29,320	H	200	281	80	40.1	25-3021 Self-enrichment education teachers
40,220	H	86	116	30	34.8	29-1126 Respiratory therapists
29,250	H	679	908	229	33.7	25-3999 All other teachers, primary, secondary, and adult
36,430	H	43	58	15	33.5	29-2031 Cardiovascular technologists and technicians
39,100	H	507	660	153	30.3	15-1041 Computer support specialists
37,950	H	200	257	57	28.7	23-2011 Paralegals and legal assistants
39,410	H	175	223	48	27.3	13-1071 Employment, recruitment, and placement specialists
28,610	H	92	117	25	27.0	31-9011 Massage therapists
38,270	H	19	25	5	26.4	27-4032 Film and video editors ³
29,300	H	48	60	12	25.3	33-9021 Private detectives and investigators
28,020	H	105	131	25	24.1	21-2021 Directors, religious activities and education
38,970	H	174	214	40	23.0	29-2034 Radiologic technologists and technicians
32,590	H	24	29	5	22.0	27-3091 Interpreters and translators ²
36,680	H	212	258	46	21.9	27-1024 Graphic designers
36,240	H	45	54	10	21.9	21-1091 Health educators ²
39,180	H	60	73	13	21.7	27-1025 Interior designers
37,420	H	37	45	8	21.3	13-1121 Meeting and convention planners
33,870	H	12	15	3	20.9	27-1027 Set and exhibit designers ²
36,400	H	80	96	16	20.4	25-3011 Adult literacy, remedial education, and GED teachers and instructors
34,680	H	24	29	5	20.1	27-4099 All other media and communication equipment workers ⁷
29,040	H	147	176	29	19.4	29-2012 Medical and clinical laboratory technicians
27,880	H	130	153	24	18.3	27-2022 Coaches and scouts
32,010	H	31	37	6	17.8	13-2071 Loan counselors
41,760	H	88	104	16	17.6	13-2021 Appraisers and assessors of real estate
36,010	H	6	7	1	17.2	53-2022 Airfield operations specialists ⁴
38,680	H	58	68	10	17.2	27-3099 All other media and communication workers
35,260	H	23	27	4	16.5	27-1013 Fine artists, including painters, sculptors, and illustrators
38,360	H	84	97	12	14.6	21-1092 Probation officers and correctional treatment specialists
32,720	H	28	32	4	13.4	27-4031 Camera operators, television, video, and motion picture ²
34,060	H	95	106	11	11.5	27-1099 All other art and design workers
30,540	H	27	29	2	9.1	29-1125 Recreational therapists
37,330	H	106	110	4	4.2	17-3011 Architectural and civil drafters
40,730	H	72	74	1	1.9	17-3013 Mechanical drafters
41,090	H	38	38	0	.7	17-3012 Electrical and electronics drafters
23,370	L	305	454	149	48.7	21-1093 Social and human service assistants
20,670	L	37	54	17	46.4	31-2022 Physical therapist aides
25,630	L	79	98	18	23.2	13-2082 Tax preparers
23,470	L	63	74	11	17.7	27-2011 Actors
20,540	L	14	16	2	16.9	27-2023 Umpires, referees, and other sports officials ²
24,040	L	130	148	18	13.6	27-4021 Photographers
22,550	L	77	86	9	11.3	27-1026 Merchandise displayers and window trimmers
19,480	VL	104	117	13	12.4	27-1023 Floral designers

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
15-1031 Computer software engineers, applications	Bachelor's degree	C	4.1	15.2	80.7
15-1032 Computer software engineers, systems software	Bachelor's degree	C	4.1	15.2	80.7
17-2081 Environmental engineers	Bachelor's degree	C	7.3	6.9	85.9
25-1000 Postsecondary teachers	Doctoral degree	C	2.8	7.4	89.8
29-1123 Physical therapists	Master's degree	C	2.7	5.8	91.4
29-1122 Occupational therapists	Bachelor's degree	C	.1	13.8	86.1
13-2052 Personal financial advisors	Bachelor's degree	C	4.5	13.7	81.8
19-1041 Epidemiologists ⁴	Master's degree	C	.6	1.8	97.7
13-1111 Management analysts	Bachelor's plus experience ⁹	C	7.5	15.7	76.8
29-1051 Pharmacists	First professional degree	C	1.3	3.8	94.8
25-2040 Special education teachers	Bachelor's degree	C	3.8	5.9	90.2
29-1121 Audiologists ²	Master's degree	C	2.5	.3	97.1
13-1011 Agents and business managers of artists, performers, and athletes	Bachelor's plus experience ⁹	C	17.4	17.0	65.6
11-9151 Social and community service managers	Bachelor's degree	C	9.7	19.2	71.1
29-1127 Speech-language pathologists	Master's degree	C	1.7	1.4	97.0
19-1042 Medical scientists, except epidemiologists	Doctoral degree	C	.6	1.8	97.7
17-2031 Biomedical engineers ⁷	Bachelor's degree	C	5.9	19.2	74.9
11-9033 Education administrators, postsecondary	Bachelor's plus experience ⁹	C	8.6	17.9	73.5
25-9031 Instructional coordinators	Master's degree	C	8.2	7.1	84.6
29-1131 Veterinarians	First professional degree	C	.0	1.2	98.8
29-1198 All other health diagnosing and treating practitioners	Bachelor's degree	C	7.3	9.4	83.3
19-3031 Clinical, counseling, and school psychologists	Doctoral degree	C	.0	.6	99.4
19-2041 Environmental scientists and specialists, including health	Master's degree	C	3.3	4.4	92.3
11-2031 Public relations managers	Bachelor's plus experience ⁹	C	9.7	19.8	70.6
19-3021 Market research analysts	Master's degree	C	7.4	13.6	79.0
29-1011 Chiropractors	First professional degree	C	2.0	.2	97.9
19-1021 Biochemists and biophysicists	Doctoral degree	C	.5	3.6	95.9
19-1029 Biological scientists, all other	Bachelor's degree	C	.5	3.6	95.9
17-1012 Landscape architects	Bachelor's degree	C	3.0	9.8	87.2
19-2043 Hydrologists ⁴	Master's degree	C	3.3	4.4	92.3
11-9032 Education administrators, elementary and secondary school	Bachelor's plus experience ⁹	C	8.6	17.9	73.5
19-1022 Microbiologists	Doctoral degree	C	.5	3.6	95.9
41-9031 Sales engineers	Bachelor's degree	C	4.2	15.9	79.9
19-3092 Geographers ⁴	Master's degree	C	6.5	11.5	81.9
13-2011 Accountants and auditors	Bachelor's degree	C	6.7	19.7	73.6
29-1060 Physicians and surgeons	First professional degree	C	.8	2.3	96.9
11-9039 Education administrators, all other	Bachelor's plus experience ⁹	C	8.6	17.9	73.5
13-2051 Financial analysts	Bachelor's degree	C	5.9	15.9	78.2
53-2011 Airline pilots, copilots, and flight engineers	Bachelor's degree	C	5.0	18.9	76.1
19-1099 All other life scientists	Bachelor's degree	C	.6	1.8	97.7
25-2031 Secondary school teachers, except special and vocational education	Bachelor's degree	C	1.5	3.6	94.9
17-1011 Architects, except landscape and naval	Bachelor's degree	C	3.0	9.8	87.2
29-1041 Optometrists	First professional degree	C	8.4	8.0	83.6
23-1011 Lawyers	First professional degree	C	.7	1.5	97.8
19-2021 Atmospheric and space scientists ²	Bachelor's degree	C	.4	9.2	90.4
27-3043 Writers and authors	Bachelor's degree	C	3.0	13.1	83.8
19-3032 Industrial-organizational psychologists ⁴	Master's degree	C	.0	.6	99.4
25-2021 Elementary school teachers, except special education	Bachelor's degree	C	2.8	5.3	91.8
17-1021 Cartographers and photogrammetrists ⁴	Bachelor's degree	C	11.3	14.1	74.6
29-1081 Podiatrists ²	First professional degree	C	.6	.7	98.7
21-1012 Educational, vocational, and school counselors	Master's degree	C	10.6	19.6	69.8
53-2012 Commercial pilots	Postsecondary vocational award	C	5.0	18.9	76.1
15-2011 Actuaries	Bachelor's plus experience ⁹	C	2.7	9.0	88.4
13-2031 Budget analysts	Bachelor's degree	C	7.3	17.6	75.1
23-1022 Arbitrators, mediators, and conciliators	Bachelor's plus experience ⁹	C	.7	1.5	97.8

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation	
Dollars	Rank ¹¹	2002	2012	Numeric	Percent		
\$70,900	VH	394	573	179	45.5	15-1031	Computer software engineers, applications
74,040	VH	281	409	128	45.5	15-1032	Computer software engineers, systems software
61,410	VH	47	65	18	38.2	17-2081	Environmental engineers
49,090	VH	1,581	2,184	603	38.1	25-1000	Postsecondary teachers
57,330	VH	137	185	48	35.3	29-1123	Physical therapists
51,990	VH	82	110	29	35.2	29-1122	Occupational therapists
56,680	VH	126	170	44	34.6	13-2052	Personal financial advisors
53,840	VH	4	5	1	32.5	19-1041	Epidemiologists ⁴
60,340	VH	577	753	176	30.4	13-1111	Management analysts
77,050	VH	230	299	69	30.1	29-1051	Pharmacists
43,450	VH	433	563	130	30.0	25-2040	Special education teachers
48,400	VH	11	14	3	29.0	29-1121	Audiologists ²
						13-1011	Agents and business managers of artists, performers, and athletes
55,730	VH	15	19	4	27.8		
43,080	VH	129	164	36	27.7	11-9151	Social and community service managers
49,450	VH	94	120	26	27.2	29-1127	Speech-language pathologists
56,980	VH	58	73	16	26.9	19-1042	Medical scientists, except epidemiologists
60,410	VH	8	10	2	26.1	17-2031	Biomedical engineers ⁷
64,640	VH	125	157	32	25.9	11-9033	Education administrators, postsecondary
47,350	VH	98	123	25	25.4	25-9031	Instructional coordinators
63,090	VH	58	72	14	25.1	29-1131	Veterinarians
52,430	VH	107	134	26	24.5	29-1198	All other health diagnosing and treating practitioners
51,170	VH	137	171	34	24.4	19-3031	Clinical, counseling, and school psychologists
						19-2041	Environmental scientists and specialists, including health
47,600	VH	65	80	15	23.7		
60,640	VH	69	85	16	23.4	11-2031	Public relations managers
53,810	VH	134	166	31	23.4	19-3021	Market research analysts
65,330	VH	49	60	11	23.3	29-1011	Chiropractors
60,390	VH	17	21	4	22.9	19-1021	Biochemists and biophysicists
53,300	VH	27	33	6	22.3	19-1029	Biological scientists, all other
47,400	VH	23	28	5	22.2	17-1012	Landscape architects
56,530	VH	8	10	2	21.0	19-2043	Hydrologists ⁴
71,490	VH	217	262	45	20.7	11-9032	Education administrators, elementary and secondary school
51,020	VH	16	20	3	20.0	19-1022	Microbiologists
63,660	VH	82	98	16	19.9	41-9031	Sales engineers
53,420	VH	1	1	0	19.5	19-3092	Geographers ⁴
47,000	VH	1,055	1,261	205	19.5	13-2011	Accountants and auditors
145,600	VH	583	697	114	19.5	29-1060	Physicians and surgeons
57,840	VH	27	32	5	19.1	11-9039	Education administrators, all other
57,100	VH	172	204	32	18.7	13-2051	Financial analysts
109,580	VH	79	94	15	18.5	53-2011	Airline pilots, copilots, and flight engineers
46,140	VH	26	31	5	18.3	19-1099	All other life scientists
43,950	VH	988	1,167	180	18.2	25-2031	Secondary school teachers, except special and vocational education
56,620	VH	113	133	20	17.2	17-1011	Architects, except landscape and naval
86,090	VH	32	38	5	17.1	29-1041	Optometrists
90,290	VH	695	813	118	17.0	23-1011	Lawyers
60,200	VH	8	9	1	16.2	19-2021	Atmospheric and space scientists ²
42,790	VH	139	161	22	16.1	27-3043	Writers and authors
63,710	VH	2	2	0	16.0	19-3032	Industrial-organizational psychologists ⁴
41,780	VH	1,467	1,690	223	15.2	25-2021	Elementary school teachers, except special education
42,870	VH	9	10	1	15.1	17-1021	Cartographers and photogrammetrists ⁴
94,870	VH	13	15	2	15.0	29-1081	Podiatrists ²
44,100	VH	228	262	34	15.0	21-1012	Educational, vocational, and school counselors
47,970	VH	21	24	3	14.9	53-2012	Commercial pilots
69,970	VH	15	18	2	14.9	15-2011	Actuaries
52,480	VH	62	71	9	14.0	13-2031	Budget analysts
47,320	VH	6	7	1	13.7	23-1022	Arbitrators, mediators, and conciliators

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁶	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
19-3011 Economists ²	Master's degree	C	1.0	8.5	90.4
19-3041 Sociologists ⁷	Master's degree	C	3.5	7.1	89.5
29-9010 Occupational health and safety specialists and technicians ⁴	Bachelor's degree	C	9.2	17.5	73.3
19-2031 Chemists	Bachelor's degree	C	2.9	3.2	94.0
19-2042 Geoscientists, except hydrologists and geographers	Master's degree	C	3.3	4.4	92.3
11-9121 Natural sciences managers ²	Bachelor's plus experience ⁹	C	8.8	4.2	87.0
17-1099 All other architects, surveyors, and cartographers	Bachelor's degree	C	11.3	14.1	74.6
19-3051 Urban and regional planners	Master's degree	C	4.5	.0	95.5
17-2021 Agricultural engineers ⁷	Bachelor's degree	C	5.9	19.2	74.9
25-4021 Librarians	Master's degree	C	8.5	15.0	76.5
19-3098 All other social scientists and related workers	Master's degree	C	.0	.6	99.4
17-2199 All other engineers	Bachelor's degree	C	3.9	19.1	77.0
17-2072 Electronics engineers, except computer	Bachelor's degree	C	4.9	14.7	80.4
11-9041 Engineering managers	Bachelor's plus experience ⁹	C	7.6	16.9	75.5
25-2032 Vocational education teachers, secondary school	Bachelor's plus experience ⁹	C	1.5	3.6	94.9
25-2023 Vocational education teachers, middle school	Bachelor's plus experience ⁹	C	2.8	5.3	91.8
25-2022 Middle school teachers, except special and vocational education	Bachelor's degree	C	2.8	5.3	91.8
23-1023 Judges, magistrate judges, and magistrates	Bachelor's plus experience ⁹	C	.7	1.5	97.8
19-2032 Materials scientists ²	Bachelor's degree	C	3.2	5.6	91.2
17-2051 Civil engineers	Bachelor's degree	C	2.7	9.2	88.1
19-1023 Zoologists and wildlife biologists	Bachelor's degree	C	.5	3.6	95.9
19-2012 Physicists	Doctoral degree	C	.0	6.5	93.5
19-3093 Historians ⁴	Master's degree	C	6.5	11.5	81.9
19-2099 All other physical scientists	Bachelor's degree	C	.7	1.3	98.0
19-3094 Political scientists ⁴	Master's degree	C	6.5	11.5	81.9
23-1021 Administrative law judges, adjudicators, and hearing officers	Bachelor's plus experience ⁹	C	.7	1.5	97.8
19-2011 Astronomers ⁴	Doctoral degree	C	.0	6.5	93.5
17-2141 Mechanical engineers	Bachelor's degree	C	5.0	17.7	77.3
15-2041 Statisticians	Master's degree	C	6.7	10.4	82.9
29-1020 Dentists	First professional degree	C	1.0	3.5	95.5
17-2131 Materials engineers	Bachelor's degree	C	10.4	20.0	69.6
17-2071 Electrical engineers	Bachelor's degree	C	4.9	14.7	80.4
17-2041 Chemical engineers	Bachelor's degree	C	1.7	5.4	92.9
17-2161 Nuclear engineers ²	Bachelor's degree	C	5.4	5.5	89.1
17-2151 Mining and geological engineers, including mining safety engineers ⁷	Bachelor's degree	C	5.9	19.2	74.9
17-2121 Marine engineers and naval architects ⁷	Bachelor's degree	C	5.9	19.2	74.9
17-2011 Aerospace engineers	Bachelor's degree	C	4.5	13.8	81.8
17-2171 Petroleum engineers	Bachelor's degree	C	7.5	9.6	82.9
21-1023 Mental health and substance abuse social workers	Master's degree	C	7.8	18.4	73.8
27-3031 Public relations specialists	Bachelor's degree	C	7.8	14.3	77.8
11-9031 Education administrators, preschool and child care center/program	Bachelor's plus experience ⁹	C	8.6	17.9	73.5
29-9091 Athletic trainers ⁴	Bachelor's degree	C	9.2	17.5	73.3
21-1022 Medical and public health social workers	Bachelor's degree	C	7.8	18.4	73.8
21-9099 All other counselors, social, and religious workers	Bachelor's degree	C	10.6	19.6	69.8
21-1014 Mental health counselors	Master's degree	C	10.6	19.6	69.8
21-1011 Substance abuse and behavioral disorder counselors	Master's degree	C	10.8	19.6	69.8
21-1021 Child, family, and school social workers	Bachelor's degree	C	7.8	18.4	73.8
21-1013 Marriage and family therapists ²	Master's degree	C	9.0	16.3	74.6
25-4010 Archivists, curators, and museum technicians	Master's degree	C	3.5	9.9	87.6
25-9011 Audio-visual collections specialists ⁴	Moderate-term on-the-job training	C	8.2	7.1	84.6
21-2011 Clergy	First professional degree	C	8.2	13.9	77.8
19-3091 Anthropologists and archeologists ⁴	Master's degree	C	6.5	11.5	81.9
27-3041 Editors	Bachelor's degree	C	5.6	13.1	81.3
25-9021 Farm and home management advisors ⁴	Bachelor's degree	C	8.2	7.1	84.6
27-3020 News analysts, reporters and correspondents	Bachelor's plus experience ⁹	C	6.6	6.5	86.9

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation
Dollars	Rank ¹¹	2002	2012	Numeric	Percent	
\$68,550	VH	16	18	2	13.4	19-3011 Economists ²
53,160	VH	3	3	0	13.4	19-3041 Sociologists ⁷
46,010	VH	41	47	5	13.2	29-9010 Occupational health and safety specialists and technicians ⁴
52,890	VH	84	95	11	12.7	19-2031 Chemists
67,470	VH	28	31	3	11.5	19-2042 Geoscientists, except hydrologists and geographers
82,250	VH	45	51	5	11.3	11-9121 Natural sciences managers ²
43,210	VH	3	4	0	10.9	17-1099 All other architects, surveyors, and cartographers
49,880	VH	32	36	3	10.7	19-3051 Urban and regional planners
50,700	VH	3	3	0	10.3	17-2021 Agricultural engineers ⁷
43,090	VH	167	184	17	10.1	25-4021 Librarians
53,940	VH	68	74	7	9.7	19-3098 All other social scientists and related workers
70,540	VH	243	267	24	9.7	17-2199 All other engineers
69,930	VH	136	149	13	9.4	17-2072 Electronics engineers, except computer
90,930	VH	212	231	20	9.2	11-9041 Engineering managers
44,340	VH	105	115	10	9.0	25-2032 Vocational education teachers, secondary school
42,590	VH	18	19	2	9.0	25-2023 Vocational education teachers, middle school
41,820	VH	585	637	52	9.0	25-2022 Middle school teachers, except special and vocational education
94,070	VH	27	29	2	8.7	23-1023 Judges, magistrate judges, and magistrates
64,590	VH	7	8	1	8.6	19-2032 Materials scientists ²
60,070	VH	228	246	18	8.0	17-2051 Civil engineers
47,740	VH	15	16	1	7.7	19-1023 Zoologists and wildlife biologists
85,020	VH	13	14	1	6.9	19-2012 Physicists
42,030	VH	2	2	0	6.6	19-3093 Historians ⁴
67,890	VH	37	39	2	6.5	19-2099 All other physical scientists
80,560	VH	6	6	0	5.9	19-3094 Political scientists ⁴
64,540	VH	19	20	1	5.8	23-1021 Administrative law judges, adjudicators, and hearing officers
81,690	VH	1	1	0	4.9	19-2011 Astronomers ⁴
62,880	VH	215	225	10	4.8	17-2141 Mechanical engineers
57,080	VH	20	21	1	4.8	15-2041 Statisticians
123,210	VH	153	159	6	4.1	29-1020 Dentists
62,590	VH	24	25	1	4.1	17-2131 Materials engineers
66,180	VH	156	160	4	2.5	17-2071 Electrical engineers
72,490	VH	33	33	0	.4	17-2041 Chemical engineers
81,350	VH	16	16	0	-.1	17-2161 Nuclear engineers ²
61,770	VH	5	5	0	-2.7	17-2151 Mining and geological engineers, including mining safety engineers ⁷
66,650	VH	5	5	0	-5.0	17-2121 Marine engineers and naval architects ⁷
72,750	VH	78	74	-4	-5.2	17-2011 Aerospace engineers
83,370	VH	14	12	-1	-9.8	17-2171 Petroleum engineers
32,850	H	95	128	33	34.5	21-1023 Mental health and substance abuse social workers
41,710	H	158	210	52	32.9	27-3031 Public relations specialists
33,340	H	58	77	19	32.0	11-9031 Education administrators, preschool and child care center/program
33,820	H	14	19	4	29.9	29-9091 Athletic trainers ⁴
37,380	H	107	138	31	28.6	21-1022 Medical and public health social workers
31,150	H	248	318	70	28.3	21-9099 All other counselors, social, and religious workers
29,940	H	85	107	23	26.6	21-1014 Mental health counselors
30,180	H	67	83	16	23.2	21-1011 Substance abuse and behavioral disorder counselors
33,150	H	274	338	64	23.2	21-1021 Child, family, and school social workers
35,580	H	23	29	5	22.4	21-1013 Marriage and family therapists ²
35,270	H	22	26	4	17.0	25-4010 Archivists, curators, and museum technicians
32,360	H	10	11	2	16.3	25-9011 Audio-visual collections specialists ⁴
33,110	H	400	463	62	15.5	21-2011 Clergy
38,620	H	5	5	1	12.8	19-3091 Anthropologists and archeologists ⁴
41,170	H	130	145	15	11.8	27-3041 Editors
39,430	H	16	17	1	6.9	25-9021 Farm and home management advisors ⁴
30,510	H	66	70	4	6.2	27-3020 News analysts, reporters and correspondents

See footnotes at end of table.

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 national employment matrix occupation	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹⁰	Percent of workers aged 25 to 44, by educational attainment		
			High school or less	Some college	College or higher
17-1022 Surveyors	Bachelor's degree	C	11.3	14.1	74.6
21-1015 Rehabilitation counselors	Master's degree	C	10.6	19.6	69.8
19-3022 Survey researchers ²	Master's degree	C	7.5	14.8	77.6
25-9199 All other library, museum, training, and other education workers	Bachelor's degree	C	8.2	7.1	84.6
11-1031 Legislators	Bachelor's plus experience ⁹	C	.7	1.5	97.8

Table I-1. Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation¹—Continued

(Employment in thousands)

2002 median annual earnings		Employment		Employment change, 2002-12		2002 national employment matrix occupation	
Dollars	Rank ¹¹	2002	2012	Numeric	Percent		
\$39,970	H	56	58	2	4.2	17-1022	Surveyors
25,840	L	122	164	41	33.8	21-1015	Rehabilitation counselors
22,200	L	20	27	7	33.6	19-3022	Survey researchers ²
						25-9199	All other library, museum, training, and other education workers
27,280	L	93	116	23	24.6		
15,220	VL	67	68	1	1.1	11-1031	Legislators

¹ For a methodological note, see text that follows this table.

² Employment of the 25-44 age group was less than 10,000; employment for the 25-and-older age group was used instead.

³ Employment of the 25-and-older age group was less than 10,000; employment for the 16-and-older age group was used instead.

⁴ Employment was less than 10,000; employment for the 25-and-older age group was used instead.

⁵ CPS-based employment of the 25-44 age group was less than 10,000; employment for the 25-and-older age group was used instead.

⁶ CPS-based employment of the 25-and-older age group was less than 10,000; employment for the 16-and-older age group was used instead.

⁷ CPS-based employment was less than 10,000; CPS-based summary employment was used instead.

⁸ An occupation is placed into one of 11 categories that best describes

the education or training needed by most workers to become fully qualified in the occupation.

⁹ Bachelor's or higher degree, plus work experience.

¹⁰ The job types are presented in the following categories: HS = high school occupations, HS/SC = high school/some college occupations, SC = some college occupations, HS/SC/C = high school/some college/college occupations, SC/C = some college/college occupations, and C = college occupations.

¹¹ The quartile rankings of Occupational Employment Statistics Survey annual earnings data are presented in the following categories: VH = very high (\$41,820 or more), H = high (\$27,500 to \$41,780), L = low (\$19,710 to \$27,380), and VL = very low (up to \$19,600). The rankings were based on quartiles using one-fourth of total employment to define each quartile. Earnings are for wage and salary workers.

The educational attainment distribution of occupations: A note on methodology

To estimate the educational attainment distribution for each occupation, monthly data from the CPS are combined over the 2000-02 period. Combining 36 months of data results in more than 1 million individual data records of employed individuals aged 25 to 44 years that generated large enough sample sizes for most occupations to produce reliable estimates of the percentage of employees with a high school degree or less, with some college, and with a bachelor's degree or higher. The CPS provides employment information on 502 detailed occupations based on the 2000 Standard Occupational Classification (SOC) system. The CPS converted to the SOC in January 2003, but a research database with SOC-based occupational codes for the 2000-02 period was made available for this project. The sample weights for each month were divided by 36 so as to represent an average level of total employment for each occupation over the 3-year period from 2000-02.

Because the CPS uses SOC-based coding to generate estimates for 502 occupations, and because occupational projections are generated for a total of 725 occupations, the CPS-based occupations do not always have a one-to-one correspondence to the occupations used in BLS projections. The greater level of detail in the projections data results from the use of occupational information from the Occupational Employment Statistics (OES) survey, which provides detailed occupational employment information for 1.2 million establishments. However, the lack of educational attainment information in the OES makes the use of the CPS necessary for providing proxy estimates of educational attainment levels for each of the 725 projected occupations.

Research conducted for this project identified 370 OES-based occupations that have a one-to-one correspondence with CPS-based occupations used in the projections. Another 343 OES-based occupations are part of a larger aggregated CPS-based occupation. For example, the CPS occupation "marketing and sales managers" represents an aggregation of two OES-based occupations: "marketing managers" and "sales managers." In this case, OES data from 2002 was used to determine the prorated employment share of marketing managers out of the total OES employment for marketing managers and sales managers combined. The

number of marketing managers with some college was determined by multiplying the total number of CPS-based marketing and sales managers by the computed share. The procedure for determining the employment levels by educational attainment for sales managers was applied in a similar fashion.

Another 12 OES-based occupations represent aggregations of two or more CPS-based occupations. (The maximum number of CPS occupations rolled up within an OES occupation was four.) For each of these OES-based occupations, the employment level by education was obtained by summing the educational attainment level of each the underlying CPS-based occupations.

A weighted employment of 10,000 was used as the minimum acceptable cutoff for estimating the percentages of employees falling into the three educational attainment categories. For 526 occupations, the weighted employment of 25-to 44-year-olds exceeded 10,000 and could be used to estimate the educational attainment distribution of these occupations. For the 199 occupations with employment below 10,000, a series of alternative data sets were used. The first alternative was to use data for the 25-years-and-older age group if employment in that group exceeded 10,000. If that test failed, the second alternative was to use data for the 16-years-and-older age group if employment in that group exceeded 10,000. These two tests resulted in estimates for 145 occupations. The third alternative was to use data for the larger, aggregated CPS-based (or CPS source) occupation if its employment exceeded 10,000 for the 25- to 44-year-old age group. Alternative four consisted of using the data if the CPS source occupation employment for the 25-years-and older age group exceeded 10,000. The fifth alternative was to use the data if the CPS source occupation employment for the 16-years-and-older age group exceeded 10,000. If this latter group also had a weighted employment total less than 10,000, the educational distributions of occupations at the next higher level of aggregation in the Standard Occupational Classification system were used as proxies. In all, 54 occupations required the use of such proxies. The allocations underlying all of these estimates are available upon request.

such as so-called people skills that can result in substantial diversity in the educational attainment of those hired into the occupation.

How many jobs are projected to be filled by high school graduates (or those with less education), those with some college, and those with a bachelor's degree or higher?

Estimating the number of jobs that will be filled by those with different levels of educational attainment over the projection period is a difficult task that must be viewed with appropriate caution. The choice of methodology accompanying such estimates must be transparent to the user and allow analysts the freedom to test the sensitivity of the results to alternative specifications.

The method utilized here is to use the various education clusters to define the proportion of jobs *within* each cluster that require a high school diploma or less, some college, or a bachelor's degree or higher. For example, for college occupations (those with 60 percent or more of 25- to 44-year-olds having a bachelor's degree or higher), it is assumed that all jobs in the occupation require a college degree. The assignments of jobs for high school occupations and occupations requiring some college are similarly defined.

For a mixture occupation, such as one requiring some college or a college degree, it is assumed that *all* jobs in the cluster either require some college or a bachelor's degree or higher. To calculate the number of "some college" jobs in the occupation, one computes the ratio of the number of employees aged 25 to 44 years in that occupation who have some college to the number of employees aged 25 to 44 who have some college or a bachelor's degree or higher. The number of "some college" jobs in the occupation is the value of this ratio, multiplied by the employment level of the occupation. The employment level used depends on the period of interest. In the analysis that follows, the technique is applied to national employment matrix data for 2002, as well as projected data for the 2002–12 period. A similar procedure was adopted to identify the number of jobs requiring a bachelor's degree or higher. This procedure was then applied to the other mixture occupations.

How reasonable is this method for assigning occupational employment levels to the number of jobs requiring at most a high school diploma, some college, or a bachelor's degree or higher? One important standard of comparison is to compare the educational attainment distribution of jobs implied by these assignments with the actual distribution based on CPS data. The two distributions are not expected to be identical, but the differences that emerge provide a measure of the degree to which the actual heterogeneity of educational attainment within each occupation is not being captured by the method.

Table I-2 presents the results of a comparison between the actual educational attainment of individuals with the implied educational attainment distribution using the education clusters and the assignment method previously described. The comparison uses CPS data for 2000–02 and is restricted to occupations with a weighted employment

count of at least 10,000. As the table indicates, the educational attainment distribution based on this assignment method comes very close to the educational distribution of employment based on CPS data. Compared with the actual educational attainment distribution of employment, the percentage of individuals with a high school education or less calculated with the cluster-based method is slightly higher, while the percentage of those with a bachelor's degree or higher is slightly less.

Table I-2. Distribution of educational attainment in 2002 based on:

Education level	Actual CPS distribution of employment			Education clusters
	Ages 16 and older	Ages 25 and older	Ages 25–44	
High school graduate or less	43.2	40.8	40.4	46.3
Some college	28.6	27.7	28.4	27.8
Bachelor's degree or higher	28.2	31.5	31.1	25.8

What, then, does this assignment method imply about the projections of employment over the 2002–12 period? Table I-3 answers this question: using the education clusters to assign the projected change in employment for each of the 725 detailed occupations to the three educational attainment categories, the table shows that 39 percent of jobs are projected to be filled by those with a high school degree or less, 27 percent by those with some college, and 34 percent by those with a bachelor's degree or higher.

Table I-3. Distribution of educational attainment of projected employment change over the 2002–12 period, based on education clusters

Education level	Level	Percent
High school graduate or less	8,328	39.1
Some college	5,764	27.1
Bachelor's degree or higher	7,212	33.9
Total	21,305	100.0

Overall, these estimates suggest that more than 60 percent of the projected increase in net employment will be filled by individuals with at least some college as their highest level of educational attainment.⁵ Indeed, this figure is most likely an underestimate, because the assignment

⁵ This estimate is not an estimate of the percentage of jobs that will "require" at least some college. The concept that a job requires a specific level of educational attainment is related to the employers' demands for workers of various training and educational backgrounds. BLS projections of employment reflect equilibrium in the labor market—that is, the interplay between employer requirements for hiring workers and the skills and backgrounds of potential employees. Depending on labor market conditions, employer hiring requirements may change over time—a fact that is consistent with the substantial number of mixture occupations identified in the education cluster analysis. More importantly, the data used to estimate employment change reflect only the outcomes of those hiring decisions and provide no information on the job requirements of posted vacancies.

method described assumes no educational upgrading over the projection period.

In contrast to the foregoing results, using the 11 education/training categories set forth earlier results in a very different education profile for projected employment change. Assigning all of the employment in occupations falling into categories 1-7 to some college or more (including a bachelor's degree and higher) results in only 42 percent of projected employment falling into this education classification (results not shown in table).

What will be the high-demand occupations over the 2002-12 projection period?

Obviously, the answer to this question depends critically on the definition of a high-demand occupation. One common approach is to identify a high-demand occupation with those occupations projected to grow the fastest over the projection period. Another is to sort occupations on the basis of their projected net increase in employment. Yet another is to limit the analysis to the fastest-growing occupations that are each projected to have numerical increases above some predetermined threshold. The latter approach is often used to exclude occupations with very small employment levels in the base year that show a large percentage increase, but contribute only a small number of jobs.

This section adopts a decidedly different approach by combining an employment growth criterion with a wage threshold criterion, the latter reflecting the relative (dollar) values the labor market places on workers in alternative occupations. Specifically, high-demand occupations are defined as occupations that are expected to grow faster than average over the 2002-12 projection period and that had median earnings in the top half of the 2002 distribution of earnings in the OES survey conducted that year. These occupations are sorted by the education clusters defined earlier. Certainly, there are numerous alternative criteria that can be used to define high-demand occupations, both in terms of changing the wage and employment growth cutoffs used or by including additional or alternative characteristics of occupations. The data provided in this issue of the OPTD gives analysts the ability to sort occupations on the basis of a number of alternative specifications.

Table I-4 offers a perspective on the relative contribution of each high-demand occupation to the total increase in net employment over the projection period. Consider, for example, employment in the last occupation listed in the table: mental health counselors. According to the second column, this occupation belongs to the education cluster containing college occupations. In 2002, mental health counselors had a total employment level of 85,000 (column 3) and median annual earnings of \$29,940 (column 4). Adding up the total employment in 2002 of all of the occu-

pations in the table up to and including mental health counselors, these occupations accounted for a cumulative 28.9 percent of the total employment in that year (column 5).

Employment of mental health counselors is projected to have a net employment increase of 23,000 (column 6) over the projections period, representing a 26.6-percent change over the period (column 7). Adding up the projected employment increase of all occupations in the table up to and including mental health counselors, these high-demand, high-wage occupations are projected to account for a cumulative 46.3 percent of the total projected employment increase over the 2002-12 period (column 8).

Table I-4 lists a total of 206 occupations, of which 9 are high school occupations, 40 are "high school/some college occupations," 1 is a pure "some college" occupation, 27 are "high school/some college/college" occupations, 63 are "some college/college" occupations, and 66 are college occupations. The high school occupations listed include several construction-related occupations. The "high school/some college" occupations include a large number of fields requiring the acquisition of technical knowledge related to repair, installation, and the operation of various types of equipment. The "high school/some college/college" occupations reflect a more diverse mix of skill requirements and include a large number of service-providing fields, especially sales related. Also listed in the table are a number of management-related occupations, as well as fields requiring highly technical levels of skills. The "some college/college" occupations include a significant number of health- and computer-related fields. Finally, the college occupations naturally reflect a broad mix of professional occupations that generally require at least a bachelor's degree or higher.

Conclusion

This chapter of *Occupational Projections and Training Data* introduces a new analytical product that describes the educational attainment distribution of 25- to 44-year-olds in each of the 725 occupations for which BLS has projected employment for the 2002-12 period. These data provide important information that complements the most significant single source of postsecondary education or training assigned by BLS analysts to each occupation.

Educational clusters of occupations are developed using these new data on educational attainment. These educational clusters are used to estimate the projected number of jobs that will be filled by those with high school or less, some college, and those with a bachelor's degree or higher. And finally, occupations that were high wage in 2002 and are projected to have faster than average employment growth between 2002 and 2012 are identified and sorted by these educational clusters.

Table I-4. Cumulative proportion of total 2002 employment and 2002-12 projected employment change accounted for by high-wage, high-growth occupations

(Employment in thousands)

2002 national employment matrix occupation	Educational attainment cluster ¹	2002 employment	2002 median annual earnings	Cumulative percentage of total 2002 employment accounted for by this and all previous occupations listed in this table	Employment change, 2002-12		Cumulative percentage of total projected employment change, 2002-12 accounted for by this and all previous occupations listed in this table
					Numeric	Percent	
47-2082 Tapers	HS	41	\$39,000	0.0	8	20.8	0.0
47-2171 Reinforcing iron and rebar workers	HS	29	36,740	.0	5	16.7	.1
47-2044 Tile and marble setters	HS	33	35,770	.1	9	26.5	.1
47-2081 Drywall and ceiling tile installers	HS	135	33,710	.2	29	21.4	.2
47-2041 Carpet installers	HS	82	32,590	.2	14	16.8	.3
47-4041 Hazardous materials removal workers	HS	38	32,460	.2	16	43.1	.4
47-2051 Cement masons and concrete finishers	HS	182	30,660	.4	47	26.1	.6
47-2181 Roofers	HS	166	30,180	.5	31	18.6	.7
47-2053 Terrazzo workers and finishers	HS	6	27,910	.5	1	15.2	.8
47-4021 Elevator installers and repairers	HS/SC	21	54,070	.5	4	17.1	.8
49-1011 First-line supervisors/managers of mechanics, installers, and repairers	HS/SC	444	47,580	.8	68	15.4	1.1
47-2111 Electricians	HS/SC	659	41,390	1.3	154	23.4	1.8
47-2221 Structural iron and steel workers	HS/SC	78	40,660	1.3	12	15.9	1.9
47-2152 Plumbers, pipefitters, and steamfitters	HS/SC	492	40,170	1.7	92	18.7	2.3
49-9052 Telecommunications line installers and repairers	HS/SC	167	39,640	1.8	31	18.8	2.5
53-1011 Aircraft cargo handling supervisors	HS/SC	9	37,220	1.8	1	15.6	2.5
17-3025 Environmental engineering technicians	HS/SC	19	36,850	1.8	5	28.4	2.5
33-2011 Fire fighters	HS/SC	282	36,230	2.0	58	20.7	2.8
49-3099 All other vehicle and mobile equipment mechanics, installers, and repairers	HS/SC	36	35,840	2.0	6	15.4	2.8
49-2099 All other electrical and electronic equipment mechanics, installers, and repairers	HS/SC	22	35,160	2.0	4	19.6	2.8
43-6012 Legal secretaries	HS/SC	264	35,020	2.2	50	18.8	3.0
49-9021 Heating, air conditioning, and refrigeration mechanics and installers	HS/SC	249	34,900	2.4	79	31.8	3.4
47-2211 Sheet metal workers	HS/SC	205	34,560	2.5	41	19.8	3.6
29-2054 Respiratory therapy technicians	HS/SC	26	34,130	2.6	9	34.2	3.6
51-9122 Painters, transportation equipment	HS/SC	50	33,550	2.6	9	17.5	3.7
51-8031 Water and liquid waste treatment plant and system operators	HS/SC	99	33,390	2.7	16	16.0	3.8
53-3032 Truck drivers, heavy and tractor-trailer	HS/SC	1,767	33,210	3.9	337	19.0	5.3
37-1012 First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers	HS/SC	150	33,050	4.0	32	21.6	5.5
33-3012 Correctional officers and jailers	HS/SC	427	32,670	4.3	103	24.2	6.0
49-2098 Security and fire alarm systems installers	HS/SC	46	32,370	4.3	14	30.2	6.0
43-9031 Desktop publishers	HS/SC	35	31,620	4.3	10	29.2	6.1
47-2121 Glaziers	HS/SC	49	31,620	4.4	8	17.2	6.1
29-2061 Licensed practical and licensed vocational nurses	HS/SC	702	31,440	4.9	142	20.2	6.8
43-5011 Cargo and freight agents	HS/SC	59	31,410	4.9	9	15.5	6.8
29-2055 Surgical technologists	HS/SC	72	31,210	5.0	20	27.9	6.9
51-4192 Lay-out workers, metal and plastic	HS/SC	13	30,760	5.0	2	15.6	6.9
53-3021 Bus drivers, transit and intercity	HS/SC	202	29,580	5.1	31	15.2	7.1
27-2032 Choreographers	HS/SC	17	29,470	5.1	3	15.8	7.1
49-9042 Maintenance and repair workers, general	HS/SC	1,266	29,370	6.0	207	16.3	8.1
17-3031 Surveying and mapping technicians	HS/SC	60	29,230	6.0	14	23.2	8.1
49-9011 Mechanical door repairers	HS/SC	11	29,190	6.0	2	21.8	8.1
51-4121 Welders, cutters, solderers, and brazers	HS/SC	391	29,160	6.3	66	17.0	8.5
49-3051 Motorboat mechanics	HS/SC	22	29,050	6.3	4	18.3	8.5
47-2130 Insulation workers	HS/SC	53	28,930	6.4	8	15.8	8.5
49-9094 Locksmiths and safe repairers	HS/SC	23	28,430	6.4	5	21.0	8.5
37-1011 First-line supervisors/managers of housekeeping and janitorial workers	HS/SC	230	28,140	6.5	37	16.2	8.7
47-4071 Septic tank servicers and sewer pipe cleaners	HS/SC	18	27,940	6.6	4	21.2	8.7
35-1011 Chefs and head cooks	HS/SC	132	27,940	6.7	21	15.8	8.8
51-9082 Medical appliance technicians	HS/SC	14	27,680	6.7	2	16.1	8.8
11-1021 General and operations managers	HS/SC/C	2,049	68,210	8.1	376	18.4	10.6

See footnotes at end of table.

Table 1-4. Cumulative proportion of total 2002 employment and 2002-12 projected employment change accounted for by high-wage, high-growth occupations—Continued

(Employment in thousands)

2002 national employment matrix occupation	Educational attainment cluster ¹	2002 employment	2002 median annual earnings	Cumulative percentage of total 2002 employment accounted for by this and all previous occupations listed in this table	Employment change, 2002-12		Cumulative percentage of total projected employment change, 2002-12 accounted for by this and all previous occupations listed in this table
					Numeric	Percent	
11-3071 Transportation, storage, and distribution managers	HS/SCC	111	\$59,660	8.2	22	19.7	10.7
41-4011 Sales representatives, wholesale and manufacturing, technical and scientific products	HS/SCC	398	55,740	8.4	77	19.3	11.1
11-3011 Administrative services managers	HS/SCC	321	52,500	8.7	63	19.8	11.4
13-1051 Cost estimators	HS/SCC	188	47,550	8.8	35	18.6	11.5
29-2091 Orthotists and prosthetists	HS/SCC	5	46,260	8.8	1	18.9	11.5
33-1011 First-line supervisors/managers of correctional officers	HS/SCC	33	44,940	8.8	6	19.0	11.6
13-2099 All other financial specialists	HS/SCC	162	44,140	8.9	26	17.6	11.7
33-3052 Transit and railroad police	HS/SCC	6	43,710	8.9	1	15.9	11.7
39-6031 Flight attendants	HS/SCC	104	43,140	9.0	17	16.0	11.8
41-4012 Sales representatives, wholesale and manufacturing, except technical and scientific products	HS/SCC	1,459	42,730	10.0	279	19.2	13.1
29-1031 Dietitians and nutritionists	HS/SCC	49	41,170	10.1	9	17.8	13.1
19-4092 Forensic science technicians	HS/SCC	6	41,040	10.1	2	18.9	13.1
25-2012 Kindergarten teachers, except special education	HS/SCC	168	39,810	10.2	46	27.2	13.4
39-1011 Gaming supervisors	HS/SCC	39	39,290	10.2	6	15.7	13.4
27-4014 Sound engineering technicians	HS/SCC	13	36,970	10.2	3	25.5	13.4
27-2042 Musicians and singers	HS/SCC	161	36,290	10.3	27	17.1	13.5
19-4091 Environmental science and protection technicians, including health	HS/SCC	26	35,320	10.3	10	36.8	13.6
41-9098 All other sales and related workers	HS/SCC	577	35,170	10.7	140	24.3	14.2
33-1099 All other first-line supervisors/managers, protective service workers	HS/SCC	56	34,320	10.8	13	23.9	14.3
19-4098 All other life, physical, and social science technicians	HS/SCC	137	34,030	10.9	24	17.5	14.4
27-2099 All other entertainers and performers, sports and related workers	HS/SCC	56	33,740	10.9	9	16.4	14.5
49-2011 Computer, automated teller, and office machine repairers	HS/SCC	156	33,250	11.0	24	15.0	14.6
19-4021 Biological technicians	HS/SCC	48	32,710	11.1	9	19.4	14.6
29-9199 All other health practitioners and technical workers	HS/SCC	190	31,690	11.2	52	27.2	14.8
27-4011 Audio and video equipment technicians	HS/SCC	42	31,110	11.2	11	26.8	14.9
43-4161 Human resources assistants, except payroll and timekeeping	HS/SCC	174	30,410	11.3	33	19.2	15.1
31-2011 Occupational therapist assistants	SC	18	36,660	11.4	7	39.2	15.1
11-1011 Chief executives	SCC	553	126,260	11.7	93	16.8	15.5
11-3021 Computer and information systems managers	SCC	264	85,240	11.9	103	36.1	16.0
11-2021 Marketing managers	SCC	203	78,250	12.1	43	21.4	16.2
15-1011 Computer and information scientists, research	SCC	23	77,780	12.1	7	30.0	16.2
11-2022 Sales managers	SCC	343	75,040	12.3	105	30.5	16.7
11-3031 Financial managers	SCC	599	73,340	12.7	109	18.3	17.2
11-3040 Human resources managers	SCC	232	64,710	12.9	39	19.4	17.4
29-1071 Physician assistants	SCC	63	64,670	12.9	31	48.6	17.6
15-1051 Computer systems analysts	SCC	468	62,690	13.3	184	39.4	18.4
11-9111 Medical and health services managers	SCC	244	61,370	13.4	71	29.3	18.8
33-1012 First-line supervisors/managers of police and detectives	SCC	114	61,010	13.5	17	15.2	18.9
15-1061 Network systems and data communications analysts	SCC	186	58,420	13.6	106	57.0	19.4
11-2011 Advertising and promotions managers	SCC	85	57,130	13.7	21	25.0	19.5
15-1061 Database administrators	SCC	110	55,480	13.8	49	44.5	19.7
33-1021 First-line supervisors/managers of fire fighting and prevention workers	SCC	63	55,450	13.8	12	18.7	19.7
29-2021 Dental hygienists	SCC	148	55,320	13.9	64	43.1	20.0
15-1071 Network and computer systems administrators	SCC	251	54,810	14.1	94	37.4	20.5

See footnotes at end of table.

Table I-4. Cumulative proportion of total 2002 employment and 2002-12 projected employment change accounted for by high-wage, high-growth occupations—Continued

(Employment in thousands)

2002 national employment matrix occupation	Educational attainment cluster ¹	2002 employment	2002 median annual earnings	Cumulative percentage of total 2002 employment accounted for by this and all previous occupations listed in this table	Employment change, 2002-12		Cumulative percentage of total projected employment change, 2002-12 accounted for by this and all previous occupations listed in this table
					Numeric	Percent	
15-1099 All other computer specialists	SC/C	192	\$54,070	14.2	70	36.5	20.8
33-3021 Detectives and criminal investigators	SC/C	94	51,410	14.3	21	22.4	20.9
13-1198 All other business operations specialists	SC/C	1,056	50,680	15.0	290	27.5	22.3
29-1124 Radiation therapists	SC/C	14	50,640	15.0	4	31.6	22.3
27-3042 Technical writers	SC/C	50	50,580	15.1	13	27.1	22.4
29-2033 Nuclear medicine technologists	SC/C	17	48,750	15.1	4	23.6	22.4
29-2032 Diagnostic medical sonographers	SC/C	37	48,660	15.1	9	24.0	22.4
29-1111 Registered nurses	SC/C	2,284	48,090	16.7	623	27.3	25.3
27-2012 Producers and directors	SC/C	76	46,240	16.7	14	18.2	25.4
27-2021 Athletes and sports competitors	SC/C	15	45,320	16.7	3	19.2	25.4
13-1072 Compensation, benefits, and job analysis specialists	SC/C	91	45,100	16.8	25	28.0	25.5
13-2072 Loan officers	SC/C	223	43,980	17.0	42	18.8	25.7
27-1014 Multi-media artists and animators	SC/C	75	43,980	17.0	12	15.8	25.8
13-1061 Emergency management specialists	SC/C	11	43,560	17.0	3	28.2	25.8
29-2011 Medical and clinical laboratory technologists	SC/C	150	42,910	17.1	29	19.3	25.9
13-2041 Credit analysts	SC/C	66	42,910	17.2	12	18.7	26.0
13-1073 Training and development specialists	SC/C	209	42,800	17.3	58	27.9	26.3
33-3051 Police and sheriff's patrol officers	SC/C	619	42,270	17.8	153	24.7	27.0
13-2021 Appraisers and assessors of real estate	SC/C	88	41,760	17.8	16	17.6	27.1
29-1126 Respiratory therapists	SC/C	86	40,220	17.9	30	34.8	27.2
13-1071 Employment, recruitment, and placement specialists	SC/C	175	39,410	18.0	48	27.3	27.4
27-1025 Interior designers	SC/C	60	39,180	18.0	13	21.7	27.5
15-1041 Computer support specialists	SC/C	507	39,100	18.4	153	30.3	28.2
29-2034 Radiologic technologists and technicians	SC/C	174	38,970	18.5	40	23.0	28.4
27-3099 All other media and communication workers	SC/C	58	38,680	18.5	10	17.2	28.4
27-4032 Film and video editors	SC/C	19	38,270	18.6	5	26.4	28.5
23-2011 Paralegals and legal assistants	SC/C	200	37,950	18.7	57	28.7	28.7
13-1121 Meeting and convention planners	SC/C	37	37,420	18.7	8	21.3	28.8
27-1024 Graphic designers	SC/C	212	36,680	18.9	46	21.9	29.0
29-2031 Cardiovascular technologists and technicians	SC/C	43	36,430	18.9	15	33.5	29.1
25-3011 Adult literacy, remedial education, and GED teachers and instructors	SC/C	80	36,400	19.0	16	20.4	29.1
21-1091 Health educators	SC/C	45	36,240	19.0	10	21.9	29.2
31-2021 Physical therapist assistants	SC/C	50	36,080	19.0	22	44.6	29.3
53-2022 Airfield operations specialists	SC/C	6	36,010	19.0	1	17.2	29.3
27-1013 Fine artists, including painters, sculptors, and illustrators	SC/C	23	35,260	19.0	4	16.5	29.3
27-4099 All other media and communication equipment workers	SC/C	24	34,680	19.1	5	20.1	29.3
27-1027 Set and exhibit designers	SC/C	12	33,870	19.1	3	20.9	29.3
27-3091 Interpreters and translators	SC/C	24	32,590	19.1	5	22.0	29.4
13-2071 Loan counselors	SC/C	31	32,010	19.1	6	17.8	29.4
25-3021 Self-enrichment education teachers	SC/C	200	29,320	19.2	80	40.1	29.8
33-9021 Private detectives and investigators	SC/C	48	29,300	19.3	12	25.3	29.8
25-3999 All other teachers, primary, secondary, and adult	SC/C	679	29,250	19.8	229	33.7	30.9
29-2012 Medical and clinical laboratory technicians	SC/C	147	29,040	19.9	29	19.4	31.0
31-9011 Massage therapists	SC/C	92	28,610	19.9	25	27.0	31.1
21-2021 Directors, religious activities and education	SC/C	105	28,020	20.0	25	24.1	31.3
27-2022 Coaches and scouts	SC/C	130	27,860	20.1	24	18.3	31.4
29-1060 Physicians and surgeons	C	583	145,600	20.5	114	19.5	31.9
53-2011 Airline pilots, copilots, and flight engineers	C	79	109,580	20.5	15	18.5	32.0
29-1081 Podiatrists	C	13	94,870	20.6	2	15.0	32.0
23-1011 Lawyers	C	695	90,290	21.0	118	17.0	32.5
29-1041 Optometrists	C	32	86,090	21.1	5	17.1	32.6

See footnotes at end of table.

Table I-4. Cumulative proportion of total 2002 employment and 2002-12 projected employment change accounted for by high-wage, high-growth occupations—Continued

(Employment in thousands)

2002 national employment matrix occupation	Educational attainment cluster ¹	2002 employment	2002 median annual earnings	Cumulative percentage of total 2002 employment accounted for by this and all previous occupations listed in this table	Employment change, 2002-12		Cumulative percentage of total projected employment change, 2002-12 accounted for by this and all previous occupations listed in this table
					Numeric	Percent	
29-1051 Pharmacists	C	230	\$77,050	21.2	69	30.1	32.9
15-1032 Computer software engineers, systems software	C	281	74,040	21.4	128	45.5	33.5
11-9032 Education administrators, elementary and secondary school	C	217	71,490	21.6	45	20.7	33.7
15-1031 Computer software engineers, applications	C	394	70,900	21.8	179	45.5	34.5
15-2011 Actuaries	C	15	69,970	21.8	2	14.9	34.6
29-1011 Chiropractors	C	49	65,330	21.9	11	23.3	34.6
11-9033 Education administrators, postsecondary	C	125	64,640	22.0	32	25.9	34.8
19-3032 Industrial-organizational psychologists	C	2	63,710	22.0	0	16.0	34.8
41-9031 Sales engineers	C	82	63,660	22.0	16	19.9	34.8
29-1131 Veterinarians	C	58	63,090	22.1	14	25.1	34.9
17-2081 Environmental engineers	C	47	61,410	22.1	18	38.2	35.0
11-2031 Public relations managers	C	69	60,640	22.1	16	23.4	35.1
17-2031 Biomedical engineers	C	8	60,410	22.2	2	26.1	35.1
19-1021 Biochemists and biophysicists	C	17	60,390	22.2	4	22.9	35.1
13-1111 Management analysts	C	577	60,340	22.6	176	30.4	35.9
19-2021 Atmospheric and space scientists	C	8	60,200	22.6	1	16.2	35.9
11-9039 Education administrators, all other	C	27	57,840	22.6	5	19.1	36.0
29-1123 Physical therapists	C	137	57,330	22.7	48	35.3	36.2
13-2051 Financial analysts	C	172	57,100	22.8	32	18.7	36.3
19-1042 Medical scientists, except epidemiologists	C	58	56,980	22.8	16	26.9	36.4
13-2052 Personal financial advisors	C	126	56,680	22.9	44	34.6	36.6
17-1011 Architects, except landscape and naval	C	113	56,620	23.0	20	17.2	36.7
19-2043 Hydrologists	C	8	56,530	23.0	2	21.0	36.7
13-1011 Agents and business managers of artists, performers, and athletes	C	15	55,730	23.0	4	27.8	36.7
19-1041 Epidemiologists	C	4	53,840	23.0	1	32.5	36.7
19-3021 Market research analysts	C	134	53,810	23.1	31	23.4	36.9
19-3092 Geographers	C	1	53,420	23.1	0	19.5	36.9
19-1029 Biological scientists, all other	C	27	53,300	23.1	6	22.3	36.9
29-1198 All other health diagnosing and treating practitioners	C	107	52,430	23.2	26	24.5	37.0
29-1122 Occupational therapists	C	82	51,990	23.3	29	35.2	37.2
19-3031 Clinical, counseling, and school psychologists	C	137	51,170	23.4	34	24.4	37.3
19-1022 Microbiologists	C	16	51,020	23.4	3	20.0	37.3
29-1127 Speech-language pathologists	C	94	49,450	23.4	26	27.2	37.5
25-1000 Postsecondary teachers	C	1,581	49,090	24.5	603	38.1	40.3
29-1121 Audiologists	C	11	48,400	24.5	3	29.0	40.3
53-2012 Commercial pilots	C	21	47,970	24.6	3	14.9	40.3
19-2041 Environmental scientists and specialists, including health	C	65	47,600	24.6	15	23.7	40.4
17-1012 Landscape architects	C	23	47,400	24.6	5	22.2	40.4
25-9031 Instructional coordinators	C	98	47,350	24.7	25	25.4	40.5
13-2011 Accountants and auditors	C	1,055	47,000	25.4	205	19.5	41.5
19-1099 All other life scientists	C	26	46,140	25.4	5	18.3	41.5
21-1012 Educational, vocational, and school counselors	C	228	44,100	25.6	34	15.0	41.7
25-2031 Secondary school teachers, except special and vocational education	C	988	43,950	26.3	180	18.2	42.5
25-2040 Special education teachers	C	433	43,450	26.6	130	30.0	43.1
11-9151 Social and community service managers	C	129	43,080	26.7	36	27.7	43.3
17-1021 Cartographers and photogrammetrists	C	9	42,870	26.7	1	15.1	43.3
27-3043 Writers and authors	C	139	42,790	26.8	22	16.1	43.4
25-2021 Elementary school teachers, except special education	C	1,467	41,780	27.8	223	15.2	44.5
27-3031 Public relations specialists	C	158	41,710	27.9	52	32.9	44.7
21-1022 Medical and public health social workers	C	107	37,380	28.0	31	28.6	44.8

See footnotes at end of table.

Table I-4. Cumulative proportion of total 2002 employment and 2002-12 projected employment change accounted for by high-wage, high-growth occupations—Continued

(Employment in thousands)

2002 national employment matrix occupation	Educational attainment cluster ¹	2002 employment	2002 median annual earnings	Cumulative percentage of total 2002 employment accounted for by this and all previous occupations listed in this table	Employment change, 2002-12		Cumulative percentage of total projected employment change, 2002-12 accounted for by this and all previous occupations listed in this table
					Numeric	Percent	
21-1013 Marriage and family therapists	C	23	\$35,580	28.0	5	22.4	44.9
25-4010 Archivists, curators, and museum technicians	C	22	35,270	28.0	4	17.0	44.9
29-9091 Athletic trainers	C	14	33,820	28.0	4	29.9	44.9
11-9031 Education administrators, preschool and child care center/program	C	58	33,340	28.1	19	32.0	45.0
21-1021 Child, family, and school social workers	C	274	33,150	28.3	64	23.2	45.3
21-2011 Clergy	C	400	33,110	28.5	62	15.5	45.6
21-1023 Mental health and substance abuse social workers ...	C	95	32,850	28.6	33	34.5	45.7
25-9011 Audio-visual collections specialists	C	10	32,360	28.6	2	16.3	45.7
21-9099 All other counselors, social, and religious workers	C	248	31,150	28.8	70	28.3	46.1
21-1011 Substance abuse and behavioral disorder counselors	C	67	30,180	28.8	16	23.2	46.1
21-1014 Mental health counselors	C	85	29,940	28.9	23	26.6	46.3

¹ The job types are presented in the following categories: HS = high school occupations, HS/SC = high school/some college occupations, SC = some college occupations, HS/SC/C = high school/some college/college

occupations, SC/C = some college/college occupations, and C = college occupations. For additional information on educational attainment cluster methodology, see text of this chapter and Table I-1.

Educational upgrading of occupations: A sensitivity analysis

The choice of 25- to 44-year-olds as the basis for assigning educational attainment distributions to each occupation can affect the education cluster assigned to each occupation. If there has been an increase in the average level of educational attainment in the Nation over time, then one may expect that occupations will sort into higher education clusters as the age group that is used to define the clusters is limited to younger workers. For example, an occupation that is classified as "high school/some college" for the group of workers aged 25 years and older may end up classified as "some college/college" for workers aged 25 to 44 years. This section reports the sensitivity of the assignments of occupations to education clusters for three groups of workers: those aged 25 years and older, those aged 25-44, and those aged 25 to 34 years. The educational attainment of those in CPS-coded occupations for the period 2000-02 is used for the analysis, with occupations having a weighted employment of less than 10,000 excluded.

The accompanying text table presents the results. There were 331 CPS-coded occupations with a weighted employment of 10,000 or greater for each of the three age groups. The text presents a side-by-side comparison of differences that emerged between the education cluster assignments for the 25-years-and-older age group with those for the 25- to 44-year-old age group. The table is sorted first by the education cluster of occupations in the 25-years-and-older group and then by the education cluster of occupations in the 25- to 44-year-old group. A total of 20 occupations moved into an education cluster that represents a higher average level of overall educational attainment. By contrast, only four occupations moved into a lower education cluster. The table also presents similar results comparing the education cluster assignments for the 25-years-and-older age group with those for the 25- to 34-year-old age group. A total of 41 occupations moved into a higher education cluster. Comparing the two tables, one finds that a net 21 additional occupations out of a total of 331 moved into a higher education cluster as the age group was restricted from 25- to 44-year olds to 25- to 34-year-olds.

Number of occupations falling into education clusters for CPS-based occupations, 2000-02, by selected age groups

25 and older	25-44 years of age					
	High school	High school/some college	Some college	High school/some college/college	Some college/college	College
High school	44	5	0	0	0	0
High school/some college	1	121	0	3	0	0
Some college	0	0	0	0	0	0
High school/some college/college	1	2	0	52	6	0
Some college/college	0	0	0	0	44	6
College	0	0	0	0	0	46

25 and older	25-34 years of age					
	High school	High school/some college	Some college	High school/some college/college	Some college/college	College
High school	40	9	0	0	0	0
High school/some college	1	119	5	0	0	0
Some college	0	0	0	0	0	0
High school/some college/college	0	1	0	42	18	0
Some college/college	0	0	0	2	39	9
College	0	0	0	0	0	46

These differences point to the educational upgrading of a number of occupations over time as the age group under analysis is restricted from those 25 and older to those 25 to 44 years and then to those 25 to 34 years of age. The choice of using 25- to 44-year-olds as the basis for defining educational attainment distributions of occupations reflects the balance of concern over the educational upgrading phenomenon and over adequately capturing individuals in management occupations. Restricting the analysis to 25- to 34-year-olds would miss significant numbers of individuals entering this major occupational group. Using the combined 2000-02 CPS data indicates that 18.7 percent of managers were ages 25 to 34 years, while 30.4 percent were in the 35- to 44-year age group.

The conclusion that there has been a general upgrading of educational requirements in a number of occupations over time also is a conservative one in the sense that only those occupations which crossed either the 20-percent or the 60-percent thresholds for high school or less, some college, or bachelor's degree or higher are candidates for the list of occupations in the accompanying tables. Any educational upgrading that has occurred within education clusters is not identified. However, the purpose of this sensitivity analysis is to determine the efficacy of the choice of education clusters, not to measure the heterogeneity within each cluster. An analysis of this more general phenomenon awaits further research.

Chapter II. The 2002–12 National Employment Matrix Structure

The Bureau of Labor Statistics (BLS) has developed occupational projections biennially as part of its Occupational Outlook program for more than five decades. Although the data sources and projection techniques have changed, and computers now perform calculations previously done manually, the basic procedures remain the same. BLS occupational projections use three employment matrices as a tool for analyzing occupation utilization within industries and for projecting occupational employment. Because the matrices share the same configuration, an early step in each projection cycle is defining their occupation and industry employment structure. Occupations define matrix rows, while class of worker categories—self-employed; unpaid family; and wage and salary workers, by industry—define matrix columns. Once defined, the three matrices use the same structure.

A major goal in defining the matrix structure is to provide the broadest possible measures of employment. The availability of data for constructing the base-year matrix—the 2002 national employment matrix—generally is the limiting factor. Data on employment of the self-employed, unpaid family workers, and wage and salary workers, by industry, come from a variety of sources and fill the cells of the base-year matrix. Employment measures jobs, not individuals, because individuals may be employed by more than one employer.

2002 base-year employment matrix

Calculating employment for each cell in the base-year matrix—currently the year 2002—establishes the initial employment levels for occupational projections.

Self-employed and unpaid family worker employment come from the Current Population Survey (CPS). Information on second jobs also is collected for one-quarter of the sample each month and is combined with primary-job occupational employment estimates to provide a broader employment measure of the self-employed and unpaid family workers. Employment figures for these two categories of workers are available only at the total, all-industries level.

For most industries, Occupational Employment Statistics (OES) survey data identify occupational distributions, and Current Employment Statistics (CES) data provide information on total industry employment.¹ Wage and salary

industry employment estimates, by occupation, are derived by multiplying the proportion of wage and salary occupational employment in the industry, calculated from OES survey data, by base-year total wage and salary industry employment, computed from CES data.

Other sources provide information for industries not covered by the OES survey. The CPS furnishes wage and salary occupation data for agricultural production, forestry, fishing, hunting, and support activities for agriculture and forestry. Federal Government and U.S. Postal Service (USPS) occupational wage and salary employment data come from the U.S. Office of Personnel Management (OPM) and the USPS, respectively.

Total base-year employment for an occupation is the sum of employment in a row across all columns—the combination of self-employed, unpaid family, and wage and salary workers. Occupational employment within industries, divided by total industry employment, yields the occupational distribution ratios used in preparing the projected-year employment matrix.

Change-factor matrix

A second matrix, the change-factor matrix, uses the same structure as the base-year employment matrix to estimate changes in the utilization of wage and salary workers, by occupation, within industries. Systems analysts, for example, would be expected to become a greater proportion of each industry's employment as the number of applications for computer use continues to increase. The change factor multiplied by the base-year wage and salary occupational distribution ratio determines the occupational distribution ratio in the projected year. Occupational change factors are prepared only for wage and salary employment in detailed industries.

2012 Projected-year employment matrix

Preparing the projected-year employment matrix is the last step in the projection process. For a given industry, projected-year industry wage and salary employment, multiplied by the projected-year occupational distribution ratio, yields projected-year wage and salary occupational employment for the industry.² Occupational employment for self-employed and unpaid family workers is projected separately with the use of time-series analytical techniques. Total projected-year occupational employment is the sum

¹ The OES surveys about 400,000 establishments each year, one-third of the sample, to collect occupational wage and salary employment and wage data. Surveying the entire sample takes 3 years. Detailed information about the 2002 OES survey is available at http://www.bls.gov/oes/2002/oes_tec.htm. CES wage and salary employment data come from a monthly sample of about 300,000 establishments. For more information, visit <http://www.bls.gov/ces/home.htm>.

² Industry sector employment projections prepared in the Division of Industry Employment Projections use a comprehensive modeling technique that estimates output as well as employment. More detailed industry employment projections produced using historical time series information are included in the matrix and are consistent with their parent industry sector.

of employment in a row across all columns—the sum of the employment figures for self-employed, unpaid family, and wage and salary workers.

Classification system changes

Since their inception over 30 years ago, national employment matrices have incorporated industry-by-occupation wage and salary employment information from two different data sources. Data from the Census Bureau's Census of Population initially yielded industry-by-occupation employment patterns based on individuals' responses coded to the Census Bureau's industry and occupation classification systems.

The OES survey-based industry-by-occupation employment data adopted for use with the 1980–90 projections constituted the second data source used in preparing the national employment matrix. OES survey data were preferred because the data were collected from establishments that were given occupational definitions for reporting employment and because the OES data were collected more frequently.

The OES survey occupation structure, with some exceptions, classified occupations according to the principles of the newly created 1980 Standard Occupational Classification (SOC) system and generally was consistent with the 1970, the 1980, and even the 1990 Census of Population occupational classification systems. Large differences in employment for identical occupations occurred, however, because the OES survey obtained information from employers whereas the Census of Population relied on the responses of individuals. BLS used the 1980 SOC-based OES structure, with only minor adjustments, through the 1998–2008 occupational projections.

Occupational projections for 2000–10 incorporated the 2000 Standard Occupational Classification system.³ This change prompted major differences in the definitions and the number of occupations for which projections could be developed. The differences in employment between the 2000 SOC-structured OES survey data and earlier 1980 SOC-system-based OES survey occupational data resulted in a break in the historical occupational employment time series. In this case, the differences resulted not from a change in a data source, but from the change in the classification system.

The OES survey's industry classification system—first based on the 1977 Standard Industrial Classification (SIC) system and later adopting the 1987 SIC system—underwent relatively few changes. While the 2000–10 projections incorporated the new 2000 SOC system, the OES survey continued to use the 1987 Standard Industrial Classification system.

2002–12 Projections use the 2000 SOC system and the 2002 NAICS

Occupational projections for 2002–12 differ from those in the past in that they incorporate both the 2000 Standard Occupational Classification (SOC) system and the 2002 North American Industry Classification System (NAICS). The 2000 SOC system, first used with the 2000–10 projections, replaced the 1980 SOC system. Converting to the 2000 SOC system for the 2000–10 projections was necessitated by the OES survey's switch to that system. Similarly, 2002 OES survey data that are the first to incorporate the 2000 SOC system and the 2002 NAICS facilitated the use of these classification systems in the 2002–12 employment matrices.

The availability of 2000 Census Bureau occupation- and industry-based CPS data also made the transition easier. Although BLS began collecting 2000 SOC and 2002 NAICS-based CPS data in the January 2003 survey, CPS microdata for all surveys in 2000 through 2002 were recoded by the Census Bureau, which used the 2000 Census of Population occupation and industry classification system. The 2000 Census of Population occupation and industry classification system is almost completely consistent with the 2000 SOC system and the 2002 NAICS.

The 2002 NAICS replaces the 1987 SIC system. The new system is designed so that economic units having similar production processes are classified into the same industry in the United States, Canada, and Mexico. The industry definitions in NAICS frequently are not consistent with those formerly used with the 1987 SIC system.⁴

Incorporating the 2000 SOC system into the 2002 national employment matrix

Improving consistency with the 2000 SOC system and establishing the broadest employment coverage possible were goals desired for the 2002 national employment matrix structure. Both goals were achieved, a task that required identifying and accounting for all valid 2000 SOC occupations and identifying data sources for occupations and industries not covered by the 2002 OES survey. Table II-1 presents the occupation structure for the 2002 employment matrix.

Occupations define the rows in the matrix, and several types of occupations exist in the final structure of the matrix:

- Summary occupations (a total of 255) combine employment information on detailed—"line-item" or "rollup"—occupations and display 2002 and projected 2012 employment estimates.
- Line-item occupations (717) possess the greatest level of published occupation employment detail in the matrix, have a one-to-one relationship with

³ See "Chapter I. 2000–10 Occupational Projections Incorporate the 2000 Standard Occupational Classification System," *Occupational Projections and Training Data*, Bulletin 2542 (Bureau of Labor Statistics, January 2002).

⁴ Information on matching 1987 SIC industries with those of the 2002 NAICS is available at <http://www.census.gov/epcd/naics02>.

OES survey occupation data, and display 2002 and projected 2012 employment estimates.

- Rollup occupations (8) also possess the greatest level of published occupation employment detail in the matrix, present data from two or more collapsed occupations, and display 2002 and projected 2012 employment estimates.
- Collapsed occupations (59) possess only base-year employment; these occupations are combined to create rollup occupations.

The implementation of the SOC system in the 2002 national employment matrix clearly was an improvement over 2000 matrix efforts, but fell just short of complete success at the most detailed occupational level. Of the 725 detailed occupations—those individual occupations identified as line-item or rollup occupations in table II-1—696 are consistent with a 2000 SOC occupation. Residual occupations—the “all other...” occupation category used to classify a number of occupations within a specific group—accounted for those not consistent with the SOC system. (The treatment of residual occupations in the OES survey explains much of the inconsistencies and is discussed later in this chapter.)

The 2002 national employment matrix structure, the 10 intermediate SOC aggregation group levels, and the 22 SOC major occupation groups (excluding SOC military occupations, which are not covered in the matrix) are completely consistent with one another. While closely consistent with the 2000 SOC system structure at the detailed occupation level, and completely consistent at the major occupation group level, the matrix structure is different from the 2000 SOC structure, for several reasons.

Non-SOC occupation coverage in the OES survey data.

In an effort to reduce the number of residual occupations listed on the survey forms, in some cases the OES survey combined residual occupations from different broad occupational groups. For example, the OES survey combined the SOC occupations 13-1199, “business operation specialists, all other”; 13-1079, “human resources, training, and labor relations specialists, all other”; and 13-1081, “logisticians,” into the survey occupation 13-1199, “business operation specialists, all other.” Although this survey occupation was thus associated with a valid SOC code, the data collected represented three SOC occupations. To possess a valid SOC occupation code in the 2002 matrix directory, a detailed occupation must represent a single SOC occupation and also must represent employment data for all classes of workers and industries. Because the OES survey occupation 13-1199, “business operation specialists, all other,” consists of three SOC occupations, it is judged not to be a valid SOC occupation for inclusion in the 2002 matrix and is assigned the non-SOC code 13-1198. The title, “all other business operations specialists,” differs from the SOC title and is retained. Detailed occupations in this category are as follows:

<i>Matrix Code</i>	<i>Matrix title</i>	<i>Occupation type</i>
13-1198	<i>All other business operations specialists</i>	<i>Line item</i>
19-3098	<i>All other social scientists and related workers</i>	<i>Line item</i>
19-4098	<i>All other life, physical, and social science technicians</i>	<i>Line item</i>
25-1198	<i>All other postsecondary teachers</i>	<i>Collapse</i>
29-1198	<i>All other health diagnosing and treating practitioners</i>	<i>Line item</i>
33-9095	<i>All other protective service workers</i>	<i>Line item</i>
35-9098	<i>All other food preparation and serving related workers</i>	<i>Line item</i>
41-9098	<i>All other sales and related workers</i>	<i>Line item</i>

In a second example, the OES survey occupation 17-3099, “all other drafters, engineering, and mapping technicians,” is not in the 2000 SOC system. The OES staff created this residual occupation, which includes the data for the SOC occupations 17-3019, “drafters, all other”; and 17-3029, “engineering technicians, except drafters, all other.” Because no OES survey information is provided for either occupation 17-3019 or occupation 17-3029, the non-SOC code and title 17-3099, “all other drafters, engineering, and mapping technicians,” is retained in the 2002 occupational directory. Occupations in this group are as follows:

<i>Matrix Code</i>	<i>Matrix title</i>	<i>Occupation type</i>
17-3099	<i>All other drafters, engineering, and mapping technicians</i>	<i>Line item</i>
21-9099	<i>All other counselors, social, and religious workers</i>	<i>Line item</i>
23-9099	<i>All other legal and related workers</i>	<i>Line item</i>
25-3999	<i>All other teachers, primary, secondary, and adult</i>	<i>Line item</i>
25-9199	<i>All other library, museum, training, and other education workers</i>	<i>Line item</i>
27-1099	<i>All other art and design workers</i>	<i>Line item</i>
29-9199	<i>All other health practitioners and technical workers</i>	<i>Line item</i>
37-9099	<i>All other building and grounds cleaning and maintenance workers</i>	<i>Line item</i>
39-3199	<i>All other gaming service workers</i>	<i>Line item</i>
43-4999	<i>All other financial, information, and record clerks</i>	<i>Line item</i>
43-9999	<i>All other secretaries, administrative assistants, and other office support workers</i>	<i>Line item</i>
45-9099	<i>All other farming, fishing, and forestry workers</i>	<i>Line item</i>
47-4999	<i>All other construction trades and related workers</i>	<i>Line item</i>

A third case involves OES survey occupation 17-1099, "all other architects, surveyors, and cartographers." This occupation was used in the OES survey to facilitate data collection, is not in the 2000 SOC structure, and does not contain any occupations that are in the 2000 SOC system. The group of occupations with these features includes the following:

Matrix Code	Matrix title	Occupation type
17-1099	All other architects, surveyors, and cartographers	Line item
43-5199	All other material recording, scheduling, dispatching, and distributing workers	Line item
49-2099	All other electrical and electronic equipment mechanics, installers, and repairers	Line item
49-3099	All other vehicle and mobile equipment mechanics, installers, and repairers	Line item
51-3099	All other food processing workers	Line item
51-5099	All other printing workers	Line item
53-2099	All other air transportation workers	Line item
53-5099	All other water transportation workers	Line item

The final example, the matrix rollup occupation 53-4039, "subway, streetcar operators and all other rail transportation workers," is not an OES survey or an SOC occupation. Matrix staff aggregated OES survey and SOC occupations 53-4041, "subway and streetcar operators"; and 53-4099, "rail transportation workers, all other," so as not to release questionable data.

Adjusting OES survey data. Not all industries and occupations are surveyed by the OES, so coverage is incomplete. A number of alterations to the 2002 OES survey data were needed to improve the coverage and quality of information in the national matrix. Dealing with the impact of the OES survey's occupational structure, the recoding of OPM and USPS employment data by OES staff, and the changes necessitated by introducing the 2002 NAICS industries provided significant challenges.

Non-covered OES survey occupations. Before the 2001 survey, the OES survey structure sometimes resulted in the collection of information for "all other..." residual occupations that was inconsistent with the SOC structure.⁵ As a re-

sult, significant components of employment could not be identified for some broad occupations. This limitation of OES employment data was of special concern to staff who use OES survey-based matrix data in preparing the major BLS publication: the *Occupational Outlook Handbook* (OOH). The problem was especially acute for *Handbook* occupation 29-1060, "physicians and surgeons," because of the occupation's prominence, the potential uses of the data, and the availability of other employment data with different estimates that might raise questions about the credibility of BLS estimates. Similar concerns existed for other SOC broad occupations.

Under the 2000 SOC structure, data on physicians and surgeons could be collected for detailed occupations and aggregated to the broad occupation 29-1060, "physicians and surgeons," as follows:

29-1060 Physicians and surgeons
 29-1061 Anesthesiologists
 29-1062 Family and general practitioners
 29-1063 Internists, general
 29-1064 Obstetricians and gynecologists
 29-1065 Pediatricians, general
 29-1066 Psychiatrists
 29-1067 Surgeons
 29-1069 Physicians and surgeons, all other

The problem with the OES survey data for occupation 29-1060, "physicians and surgeons," exists because the employment data for SOC occupation 29-1069, "physicians and surgeons, all other" originally were not collected separately. Rather, the data were collected in the OES residual occupation 29-1199, "all other health diagnosing and treating practitioners," along with data for two other occupations. The OES survey code 29-1199 is a valid SOC code, but contains employment data for more than one SOC occupations: 29-1129, "therapists, all other"; and 29-1199, "health diagnosing and treating practitioners, all other." As a result, the code 29-1199 is assigned the non-SOC code 29-1198 in the matrix.

Although employment data for occupation 29-1069, "physicians and surgeons, all other," have been collected as a separate occupation since the 2000 OES survey, OES procedures continue to place the data into occupation 29-1199, "all other health diagnosing and treating practitioners," a practice that is expected to continue until 3 years of OES survey data are available. The OES survey's current output-processing structure precludes estimating employment for detailed SOC occupation 29-1069, "physicians and surgeons, all other," and thus precludes estimating total employment for the SOC broad occupation group 29-1060, "physicians and surgeons," which includes occupation 29-1069, "physicians and surgeons, all other."

To meet the data needs for the OOH, an internal OES survey data file with occupational employment estimates for all occupations surveyed in any of the years 1999-2002 was used to circumvent existing data limitations. This file permitted the development of industry-specific employ-

⁵ The OES survey began collecting data for all detailed 2000 SOC occupations in 2001, but estimates for some SOC occupations are not currently available.

ment estimates for occupation 29-1069, "physicians and surgeons, all other," as well as occupations 11-9039, "education administrators, all other," and 19-1029, "biological scientists, all other"—two additional detailed occupations needing employment data for the *Handbook*. Employment for these detailed occupations was subtracted from the appropriate residual in each industry. Total employment for each industry was retained.

Non-covered OES survey industries. The OES survey generated 2002 occupational employment estimates by applying 2002 fourth-quarter industry employment data from the Quarterly Census of Employment and Wages (QCEW) program to OES survey occupation patterns in each industry. The QCEW (also known as the ES-202) program represents the employment of workers covered by unemployment insurance programs in the United States and its territories. QCEW employment for NAICS industry 8131, "religious organizations," however, does not reflect all workers, because unemployment insurance coverage for this industry is incomplete.

In preparing occupation projections, the matrix staff applies industry employment from the Current Employment Statistics (CES) program to most industries, including religious organizations. The CES employment figure for religious organizations is almost 10 times that from the QCEW; consequently, there is concern that some occupations in this industry may not be adequately represented by the OES survey. In particular, occupation 21-2011, "clergy," the most significant occupation in religious organizations, would be considerably undercounted by using QCEW employment to select the OES sampling frame. Employment for clergy in the 2002 CPS industry-occupation matrix was about 383,000, approximately 87 percent higher than the QCEW-based OES estimate. Accordingly, the occupational distribution for religious organizations was altered by increasing employment estimates for clergy by 179,000 and decreasing those of every other occupation within the industry.

OES staff recoding of OPM and USPS occupational data. The OPM and USPS occupational employment data provided to OES staff use occupational codes and titles unique to their organizations. The OES staff recodes the OPM and USPS occupational data to SOC occupations. A review of the recoded OPM and USPS occupational data by staff preparing the occupational projections revealed deficiencies; for example, all Federal computer specialist employment was categorized into only 4 of the 11 SOC computer specialist occupations. After this review, recommendations for changes in distributing the OPM and USPS occupation data over SOC-based Federal occupational employment became part of the process of determining the matrix. This adjustment to OPM and USPS data initially coded by OES staff significantly modified occupational employment patterns within the Federal Government, increasing the number of information technology occupations from 4 to 11, as follows:

Unadjusted OES-coded Federal Government information technology occupations

- 15-1011 Computer and information scientist, research
- 15-1021 Computer programmers
- 15-1031 Computer software engineers, applications
- 15-1099 All other computer specialists

Adjusted OES-coded Federal Government information technology occupations

- 11-3021 Computer and information systems managers
- 15-1011 Computer and information scientist, research
- 15-1021 Computer programmers
- 15-1031 Computer software engineers, applications
- 15-1032 Computer software engineers, systems software
- 15-1041 Computer support specialists
- 15-1051 Computer systems analysts
- 15-1061 Database administrators
- 15-1071 Network and computer systems administrators
- 15-1081 Network systems and data communications analyst

Incorporating the 2002 NAICS into the 2002 national employment matrix

Before starting preparations for the 2002–12 projections, the Office of Occupational Statistics and Employment Projections analyzed alternatives and then decided to incorporate the 2002 NAICS into the 2002–12 projections instead of the 2004–14 projections, as originally planned. The change permitted the 2002–12 projections to share the industry classification system used by other BLS programs and other Federal statistical agencies. Incorporating the 2002 NAICS structure 2 years ahead of schedule required overcoming many challenges and caused a 2-month delay in releasing the projections. Table II-2 presents the industry structure for the 2002 employment matrix.

2002 base-year employment matrix. Several goals shaped the design of the 2002 employment matrix's industry structure:

1. Four-digit NAICS industry detail would be provided whenever possible.
2. The structure of the matrix had to be consistent with the less detailed industry configuration used by the Division of Industry Employment Projections (DIEP). More detailed matrix industry employment would have to add to DIEP industry employment controls.
3. The structure would be consistent with that used by DIEP and the CES survey program in that private and government employment would be presented separately.

For the most part, these goals were achieved. Data are available at the four-digit level for 261 of the 282 matrix columns presented, and the structure is consistent with that of the DIEP and the CES survey program. (See table IV-1, which presents DIEP industry sector employment projections and more detailed matrix industry projections.)

Class of worker categories—self-employed workers,

unpaid family workers, and wage and salary workers—by industry define the columns of the 2002 employment matrix. Industry employment information is available only on wage and salary workers. As the following tabulation shows, the OES survey contributes occupational distribution information for wage and salary workers in 269 of the 282 matrix columns, by far the largest source of occupational information (in addition, OES survey staff recoded OPM and USPS occupational employment data to the 2000 SOC structure for use in the national employment matrix):

<i>Class-of-worker category</i>	<i>Number of Data columns source</i>	
Total	282	
<i>Self-employed workers, primary job</i>	<i>1</i>	<i>CPS</i>
<i>Self-employed workers, secondary job</i>	<i>1</i>	<i>CPS</i>
<i>Unpaid family workers, primary job</i>	<i>1</i>	<i>CPS</i>
<i>Unpaid family workers, secondary job</i>	<i>1</i>	<i>CPS</i>
<i>Wage and salary worker, primary job, agriculture, forestry, fishing, and private households</i>	<i>6</i>	<i>CPS</i>
<i>Wage and salary worker, secondary job, agriculture, forestry, fishing, and private households</i>	<i>1</i>	<i>CPS</i>
<i>Wage and salary workers, Federal Government</i>	<i>1</i>	<i>OPM</i>
<i>Wage and salary workers, U.S. Postal Service</i>	<i>1</i>	<i>USPS</i>
<i>Wage and salary workers, other industries</i>	<i>269</i>	<i>OES</i>

Note that the class-of-worker structure of the 2002 matrix columns is similar to that used with the 2000–10 projections. The 2002–12 employment matrices provide data for 278 detailed wage and salary industries, compared with 266 detailed wage and salary industries presented in earlier projections.

2002 OES survey data. The OES survey is designed to collect information on all industries from one-third of the sample each year. Thus, 3 years normally would be required to provide data for the complete sample. OES survey data for 2002 would consist of 2000, 2001, and 2002 OES survey data, except that the 2002 data deviate from the norm to accommodate a change in collection procedures.

In November 2002, the OES survey changed from an annual survey of 400,000 establishments to a semiannual survey of 200,000 establishments.⁶ Consequently, data from the November 2002 survey came from a smaller sample. In addition, the November survey initiated the use of a NAICS-based sampling frame. While data were collected on NAICS industries, the data for 1999–2001 were collected under the 1987 SIC industry structure and then recoded to NAICS. In order to maintain adequate geographic, industrial, and occupational coverage through the implementation of NAICS and semiannual sampling, the November 2002 data were combined with the annual samples from

1999, 2000, and 2001, for a total sample size of approximately 1.4 million establishments.

Industries not covered in the OES survey. The 2002 OES survey did not collect data for the following industries:

- 111000 Crop production*
- 112000 Animal production*
- 113100 Timber tract operations*
- 113200 Forest nurseries and gathering of forest products*
- 114000 Fishing, hunting, and trapping*
- 115300 Support activities for forestry*
- 814100 Private households*

CPS information provided an alternative source of data for industries 111000, “crop production”; 112000, “animal production”; 114000, “fishing, hunting, and trapping”; and 814100, “private households and helped fill some other data gaps. CPS data, however, were not always available at the four-digit NAICS level.

NAICS industry 113300, “logging,” was included in the 2002 OES survey. The broader industry, 113000, “forestry and logging,” was separated into non-NAICS industry 113132, “forestry,” and NAICS industry 113300, “logging.” Data for industry 113132 were obtained from the 2002 CPS. CPS data for NAICS industries 113100, “timber tract operations,” and 113200, “forest nurseries and gathering of forest products,” are not available separately.

The OES survey included NAICS industries 115100, “support activities for crop production,” and 115200, “support activities for animal production,” but did not include coverage for industry 115300, “support activities for forestry.” Because of the incomplete coverage in the 2002 OES survey, the CPS data for NAICS 115000, “support activities for agriculture and forestry,” were substituted.

Private and government data for industries 611000, “educational services” (NAICS 61100–611700), and 622000, “hospitals” (NAICS 622100–622300) are not available separately from the OES survey. OES staff, however, provided an internal data file that separated 2002 data on the educational services and hospitals industries according to private, State government, and local government ownership. Occupational data for industries 611000, “educational services,” and 622000, “hospitals,” appear separately for private, State, and local government ownership in the 2002–12 national employment matrices.

Non-NAICS government codes. Because they do not follow the 2002 NAICS structure, all industries within the government sector, except for industry 491100, “Postal Service,” have non-NAICS codes and titles, as follows:

- 919999 Federal Government, excluding Postal Service*
- 926110 State government educational services*
- 926220 State government hospitals*
- 929200 State government, excluding education and hospitals*
- 936110 Local government educational services*
- 936220 Local government hospitals*
- 939300 Local government, excluding education and hospitals*

⁶ Beginning in 2003, the survey will take place in May and November every year.

Distributing CPS employment data for 2002 to SOC occupations. In addition to relying on the major contribution of 2002 OES survey data consistent with the structure of the 2000 SOC system, the national employment matrix depends on 2002 CPS employment data for estimates of the numbers of self-employed, unpaid family, and wage and salary workers in some industries (see earlier). The 2002 CPS was collected under the 1990 Census Bureau industry and occupation classification system, but 2002 survey responses were recoded by Census Bureau staff, using the 2000 Census of Population Occupation and Industry classification system, which closely resembles the 2000 SOC system. A crosswalk was created to distribute CPS employment from one CPS occupation over several matrix occupations on the basis of matrix occupation employment.

Of the 502 CPS occupations that were distributed in the crosswalk, 370 were exact matches. The remaining CPS

occupations were distributed to two or more SOC occupations.

Future changes

Many of the problems encountered in incorporating the 2000 SOC system and the 2002 NAICS into the 2000 national employment matrix resulted from the structure of the OES survey. Planned changes should resolve many of these problems. With the 2001 survey, data began to be collected for all detailed 2000 SOC occupations. Residual "all other..." occupations will not be listed on the survey forms, but respondents will add information to identify occupations not so listed. State analysts will recode employer entries to SOC occupations, including "all other..." occupations. OES data will be collected and processed in accordance with the 2000 SOC structure, using this procedure. BLS plans to make available OES data on all detailed 2000 SOC occupations with the release of the November 2004 OES data.

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
00-0000	NO	Total, all occupations	Summary	13-1041	YES	Compliance officers, except agriculture, construction, health and safety, and transportation	Line item
11-1300	NO	Management, business, and financial occupations	Summary	13-1051	YES	Cost estimators	Line item
11-0000	YES	Management occupations	Summary	13-1061	YES	Emergency management specialists	Line item
11-1000	YES	Top executives	Summary	13-1070	YES	Human resources, training, and labor relations specialists	Summary
11-1011	YES	Chief executives	Line item	13-1071	YES	Employment, recruitment, and placement specialists	Line item
11-1021	YES	General and operations managers	Line item	13-1072	YES	Compensation, benefits, and job analysis specialists	Line item
11-1031	YES	Legislators	Line item	13-1073	YES	Training and development specialists	Line item
11-2000	YES	Advertising, marketing, promotions, public relations, and sales managers	Summary	13-1111	YES	Management analysts	Line item
11-2011	YES	Advertising and promotions managers	Line item	13-1121	YES	Meeting and convention planners	Line item
11-2020	YES	Marketing and sales managers	Summary	13-1198	NO	All other business operations specialists	Line item
11-2021	YES	Marketing managers	Line item	13-2000	YES	Financial specialists	Summary
11-2022	YES	Sales managers	Line item	13-2011	YES	Accountants and auditors	Line item
11-2031	YES	Public relations managers	Line item	13-2021	YES	Appraisers and assessors of real estate	Line item
11-3000	YES	Operations specialties managers	Summary	13-2031	YES	Budget analysts	Line item
11-3011	YES	Administrative services managers	Line item	13-2041	YES	Credit analysts	Line item
11-3021	YES	Computer and information systems managers	Line item	13-2050	YES	Financial analysts and advisors	Summary
11-3031	YES	Financial managers	Line item	13-2051	YES	Financial analysts	Line item
11-3040	YES	Human resources managers	Line item	13-2052	YES	Personal financial advisors	Line item
11-3051	YES	Industrial production managers	Line item	13-2053	YES	Insurance underwriters	Line item
11-3061	YES	Purchasing managers	Line item	13-2061	YES	Financial examiners	Line item
11-3071	YES	Transportation, storage, and distribution managers	Line item	13-2070	YES	Loan counselors and officers	Summary
11-9000	YES	Other management occupations	Summary	13-2071	YES	Loan counselors	Line item
11-9010	YES	Agricultural managers	Summary	13-2072	YES	Loan officers	Line item
11-9011	YES	Farm, ranch, and other agricultural managers	Line item	13-2080	YES	Tax examiners, collectors, preparers, and revenue agents	Summary
11-9012	YES	Farmers and ranchers	Line item	13-2081	YES	Tax examiners, collectors, and revenue agents	Line item
11-9021	YES	Construction managers	Line item	13-2082	YES	Tax preparers	Line item
11-9030	YES	Education administrators	Summary	13-2099	YES	All other financial specialists	Line item
11-9031	YES	Education administrators, preschool and child care center/program	Line item	15-2900	NO	Professional and related occupations	Summary
11-9032	YES	Education administrators, elementary and secondary school	Line item	15-0000	YES	Computer and mathematical science occupations	Summary
11-9033	YES	Education administrators, postsecondary	Line item	15-1000	YES	Computer specialists	Summary
11-9039	YES	Education administrators, all other	Line item	15-1011	YES	Computer and information scientists, research	Line item
11-9041	YES	Engineering managers	Line item	15-1021	YES	Computer programmers	Line item
11-9051	YES	Food service managers	Line item	15-1030	YES	Computer software engineers	Summary
11-9061	YES	Funeral directors	Line item	15-1031	YES	Computer software engineers, applications	Line item
11-9071	YES	Gaming managers	Line item	15-1032	YES	Computer software engineers, systems software	Line item
11-9081	YES	Lodging managers	Line item	15-1041	YES	Computer support specialists	Line item
11-9111	YES	Medical and health services managers	Line item	15-1051	YES	Computer systems analysts	Line item
11-9121	YES	Natural sciences managers	Line item	15-1061	YES	Database administrators	Line item
11-9131	YES	Postmasters and mail superintendents	Line item	15-1071	YES	Network and computer systems administrators	Line item
11-9141	YES	Property, real estate, and community association managers	Line item	15-1081	YES	Network systems and data communications analysts	Line item
11-9151	YES	Social and community service managers	Line item	15-1099	YES	All other computer specialists	Line item
11-9199	YES	All other managers	Line item	15-2000	YES	Mathematical science occupations	Summary
13-0000	YES	Business and financial operations occupations	Summary	15-2011	YES	Actuaries	Line item
13-1000	YES	Business operations specialists	Summary	15-2021	YES	Mathematicians	Line item
13-1011	YES	Agents and business managers of artists, performers, and athletes	Line item	15-2031	YES	Operations research analysts	Line item
13-1020	YES	Buyers and purchasing agents	Summary	15-2041	YES	Statisticians	Line item
13-1021	YES	Purchasing agents and buyers, farm products	Line item	15-2090	YES	Miscellaneous mathematical science occupations	Rollup
13-1022	YES	Wholesale and retail buyers, except farm products	Line item	15-2091	YES	Mathematical technicians	Collapse
13-1023	YES	Purchasing agents, except wholesale, retail, and farm products	Line item	15-2099	YES	Mathematical scientists, all other	Collapse
13-1030	YES	Claims adjusters, appraisers, examiners, and investigators	Summary	17-0000	YES	Architecture and engineering occupations	Summary
13-1031	YES	Claims adjusters, examiners, and investigators	Line item	17-1000	YES	Architects, surveyors, and cartographers	Summary
13-1032	YES	Insurance appraisers, auto damage	Line item	17-1010	YES	Architects, except naval	Summary
				17-1011	YES	Architects, except landscape and naval	Line item

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
17-1012	YES	Landscape architects	Line item	19-1099	YES	All other life scientists.....	Line item
17-1020	YES	Surveyors, cartographers, and photogrammetrists	Summary	19-2000	YES	Physical scientists	Summary
17-1021	YES	Cartographers and photogrammetrists.....	Line item	19-2010	YES	Astronomers and physicists	Summary
17-1022	YES	Surveyors	Line item	19-2011	YES	Astronomers	Line item
17-1099	NO	All other architects, surveyors, and cartographers.....	Line item	19-2012	YES	Physicists	Line item
17-2000	YES	Engineers	Summary	19-2021	YES	Atmospheric and space scientists.....	Line item
17-2011	YES	Aerospace engineers	Line item	19-2030	YES	Chemists and materials scientists.....	Summary
17-2021	YES	Agricultural engineers.....	Line item	19-2031	YES	Chemists	Line item
17-2031	YES	Biomedical engineers.....	Line item	19-2032	YES	Materials scientists.....	Line item
17-2041	YES	Chemical engineers.....	Line item	19-2040	YES	Environmental scientists and geoscientists	Summary
17-2051	YES	Civil engineers	Line item	19-2041	YES	Environmental scientists and specialists, including health	Line item
17-2061	YES	Computer hardware engineers.....	Line item	19-2042	YES	Geoscientists, except hydrologists and geographers.....	Line item
17-2070	YES	Electrical and electronics engineers.....	Summary	19-2043	YES	Hydrologists	Line item
17-2071	YES	Electrical engineers	Line item	19-2099	YES	All other physical scientists	Line item
17-2072	YES	Electronics engineers, except computer ...	Line item	19-3000	YES	Social scientists and related occupations	Summary
17-2081	YES	Environmental engineers.....	Line item	19-3011	YES	Economists.....	Line item
17-2110	YES	Industrial engineers, including health and safety	Summary	19-3020	YES	Market and survey researchers	Summary
17-2111	YES	Health and safety engineers, except mining safety engineers and inspectors.....	Line item	19-3021	YES	Market research analysts	Line item
17-2112	YES	Industrial engineers	Line item	19-3022	YES	Survey researchers	Line item
17-2121	YES	Marine engineers and naval architects.....	Line item	19-3030	YES	Psychologists	Summary
17-2131	YES	Materials engineers	Line item	19-3031	YES	Clinical, counseling, and school psychologists	Line item
17-2141	YES	Mechanical engineers.....	Line item	19-3032	YES	Industrial-organizational psychologists.....	Line item
17-2151	YES	Mining and geological engineers, including mining safety engineers.....	Line item	19-3041	YES	Sociologists	Line item
17-2161	YES	Nuclear engineers	Line item	19-3051	YES	Urban and regional planners	Line item
17-2171	YES	Petroleum engineers	Line item	19-3090	YES	Miscellaneous social scientists and related workers	Summary
17-2199	YES	All other engineers	Line item	19-3091	YES	Anthropologists and archeologists	Line item
17-3000	YES	Drafters, engineering, and mapping technicians	Summary	19-3092	YES	Geographers	Line item
17-3010	YES	Drafters	Summary	19-3093	YES	Historians	Line item
17-3011	YES	Architectural and civil drafters	Line item	19-3094	YES	Political scientists	Line item
17-3012	YES	Electrical and electronics drafters	Line item	19-3098	NO	All other social scientists and related workers	Line item
17-3013	YES	Mechanical drafters	Line item	19-4000	YES	Life, physical, and social science technicians	Summary
17-3020	YES	Engineering technicians, except drafters	Summary	19-4011	YES	Agricultural and food science technicians	Line item
17-3021	YES	Aerospace engineering and operations technicians	Line item	19-4021	YES	Biological technicians.....	Line item
17-3022	YES	Civil engineering technicians.....	Line item	19-4031	YES	Chemical technicians	Line item
17-3023	YES	Electrical and electronic engineering technicians	Line item	19-4041	YES	Geological and petroleum technicians	Line item
17-3024	YES	Electro-mechanical technicians.....	Line item	19-4051	YES	Nuclear technicians	Line item
17-3025	YES	Environmental engineering technicians.....	Line item	19-4090	YES	Other life, physical, and social science technicians	Summary
17-3026	YES	Industrial engineering technicians	Line item	19-4091	YES	Environmental science and protection technicians, including health.....	Line item
17-3027	YES	Mechanical engineering technicians	Line item	19-4092	YES	Forensic science technicians	Line item
17-3031	YES	Surveying and mapping technicians.....	Line item	19-4093	YES	Forest and conservation technicians	Line item
17-3099	NO	All other drafters, engineering, and mapping technicians	Line item	19-4098	NO	All other life, physical, and social science technicians.....	Line item
19-0000	YES	Life, physical, and social science occupations.....	Summary	21-0000	YES	Community and social services occupations.....	Summary
19-1000	YES	Life scientists.....	Summary	21-1000	YES	Counselors, social workers, and other community and social service specialists	Summary
19-1010	YES	Agricultural and food scientists.....	Line item	21-1010	YES	Counselors	Summary
19-1020	YES	Biological scientists	Summary	21-1011	YES	Substance abuse and behavioral disorder counselors	Line item
19-1021	YES	Biochemists and biophysicists.....	Line item	21-1012	YES	Educational, vocational, and school counselors	Line item
19-1022	YES	Microbiologists.....	Line item	21-1013	YES	Marriage and family therapists	Line item
19-1023	YES	Zoologists and wildlife biologists	Line item	21-1014	YES	Mental health counselors	Line item
19-1029	YES	Biological scientists, all other	Line item	21-1015	YES	Rehabilitation counselors	Line item
19-1030	YES	Conservation scientists and foresters	Summary	21-1020	YES	Social workers	Summary
19-1031	YES	Conservation scientists	Line item	21-1021	YES	Child, family, and school social workers	Line item
19-1032	YES	Foresters	Line item	21-1022	YES	Medical and public health social workers	Line item
19-1040	YES	Medical scientists	Summary				
19-1041	YES	Epidemiologists	Line item				
19-1042	YES	Medical scientists, except epidemiologists	Line item				

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
21-1023	YES	Mental health and substance abuse social workers	Line item	25-1081	YES	Education teachers, postsecondary	Collapse
21-1090	YES	Miscellaneous community and social service specialists	Summary	25-1082	YES	Library science teachers, postsecondary	Collapse
21-1091	YES	Health educators	Line item	25-1111	YES	Criminal justice and law enforcement teachers, postsecondary	Collapse
21-1092	YES	Probation officers and correctional treatment specialists	Line item	25-1112	YES	Law teachers, postsecondary	Collapse
21-1093	YES	Social and human service assistants	Line item	25-1113	YES	Social work teachers, postsecondary	Collapse
21-2000	YES	Religious workers	Summary	25-1121	YES	Art, drama, and music teachers, postsecondary	Collapse
21-2011	YES	Clergy	Line item	25-1122	YES	Communications teachers, postsecondary	Collapse
21-2021	YES	Directors, religious activities and education	Line item	25-1123	YES	English language and literature teachers, postsecondary	Collapse
21-9099	NO	All other counselors, social, and religious workers	Line item	25-1124	YES	Foreign language and literature teachers, postsecondary	Collapse
23-0000	YES	Legal occupations	Summary	25-1125	YES	History teachers, postsecondary	Collapse
23-1000	YES	Lawyers, judges, and related workers	Summary	25-1126	YES	Philosophy and religion teachers, postsecondary	Collapse
23-1011	YES	Lawyers	Line item	25-1191	YES	Graduate teaching assistants	Collapse
23-1020	YES	Judges, magistrates, and other judicial workers	Summary	25-1192	YES	Home economics teachers, postsecondary	Collapse
23-1021	YES	Administrative law judges, adjudicators, and hearing officers	Line item	25-1193	YES	Recreation and fitness studies teachers, postsecondary	Collapse
23-1022	YES	Arbitrators, mediators, and conciliators	Line item	25-1194	YES	Vocational education teachers, postsecondary	Collapse
23-1023	YES	Judges, magistrate judges, and magistrates	Line item	25-1198	NO	All other postsecondary teachers	Collapse
23-2000	YES	Legal support workers	Summary	25-2000	YES	Primary, secondary, and special education teachers	Summary
23-2011	YES	Paralegals and legal assistants	Line item	25-2010	YES	Preschool and kindergarten teachers	Summary
23-2090	YES	Miscellaneous legal support workers	Summary	25-2011	YES	Preschool teachers, except special education	Line item
23-2091	YES	Court reporters	Line item	25-2012	YES	Kindergarten teachers, except special education	Line item
23-2092	YES	Law clerks	Line item	25-2020	YES	Elementary and middle school teachers	Summary
23-2093	YES	Title examiners, abstractors, and searchers	Line item	25-2021	YES	Elementary school teachers, except special education	Line item
23-9099	NO	All other legal and related workers	Line item	25-2022	YES	Middle school teachers, except special and vocational education	Line item
25-0000	YES	Education, training, and library occupations	Summary	25-2023	YES	Vocational education teachers, middle school	Line item
25-1000	YES	Postsecondary teachers	Rollup	25-2030	YES	Secondary school teachers	Summary
25-1011	YES	Business teachers, postsecondary	Collapse	25-2031	YES	Secondary school teachers, except special and vocational education	Line item
25-1021	YES	Computer science teachers, postsecondary	Collapse	25-2032	YES	Vocational education teachers, secondary school	Line item
25-1022	YES	Mathematical science teachers, postsecondary	Collapse	25-2040	YES	Special education teachers	Rollup
25-1031	YES	Architecture teachers, postsecondary	Collapse	25-2041	YES	Special education teachers, preschool, kindergarten, and elementary school	Collapse
25-1032	YES	Engineering teachers, postsecondary	Collapse	25-2042	YES	Special education teachers, middle school	Collapse
25-1041	YES	Agricultural sciences teachers, postsecondary	Collapse	25-2043	YES	Special education teachers, secondary school	Collapse
25-1042	YES	Biological science teachers, postsecondary	Collapse	25-3000	YES	Other teachers and instructors	Summary
25-1043	YES	Forestry and conservation science teachers, postsecondary	Collapse	25-3011	YES	Adult literacy, remedial education, and GED teachers and instructors	Line item
25-1051	YES	Atmospheric, earth, marine, and space sciences teachers, postsecondary	Collapse	25-3021	YES	Self-enrichment education teachers	Line item
25-1052	YES	Chemistry teachers, postsecondary	Collapse	25-3999	NO	All other teachers, primary, secondary, and adult	Line item
25-1053	YES	Environmental science teachers, postsecondary	Collapse	25-4000	YES	Librarians, curators, and archivists	Summary
25-1054	YES	Physics teachers, postsecondary	Collapse	25-4010	YES	Archivists, curators, and museum technicians	Line item
25-1061	YES	Anthropology and archeology teachers, postsecondary	Collapse	25-4021	YES	Librarians	Line item
25-1062	YES	Area, ethnic, and cultural studies teachers, postsecondary	Collapse	25-4031	YES	Library technicians	Line item
25-1063	YES	Economics teachers, postsecondary	Collapse	25-9000	YES	Other education, training, and library occupations	Summary
25-1064	YES	Geography teachers, postsecondary	Collapse	25-9011	YES	Audio-visual collections specialists	Line item
25-1065	YES	Political science teachers, postsecondary	Collapse	25-9021	YES	Farm and home management advisors	Line item
25-1066	YES	Psychology teachers, postsecondary	Collapse	25-9031	YES	Instructional coordinators	Line item
25-1067	YES	Sociology teachers, postsecondary	Collapse	25-9041	YES	Teacher assistants	Line item
25-1071	YES	Health specialties teachers, postsecondary	Collapse				
25-1072	YES	Nursing instructors and teachers, postsecondary	Collapse				

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
25-9199	NO	All other library, museum, training, and other education workers.....	Line item	27-4099	YES	All other media and communication equipment workers	Line item
27-0000	YES	Arts, design, entertainment, sports, and media occupations	Summary	29-0000	YES	Healthcare practitioners and technical occupations	Summary
27-1000	YES	Art and design occupations	Summary	29-1000	YES	Health diagnosing and treating practitioners	Summary
27-1010	YES	Artists and related workers	Summary	29-1011	YES	Chiropractors	Line item
27-1011	YES	Art directors	Line item	29-1020	YES	Dentists	Line item
27-1013	YES	Fine artists, including painters, sculptors, and illustrators	Line item	29-1031	YES	Dietitians and nutritionists	Line item
27-1014	YES	Multi-media artists and animators	Line item	29-1041	YES	Optometrists	Line item
27-1020	YES	Designers	Summary	29-1051	YES	Pharmacists	Line item
27-1021	YES	Commercial and industrial designers	Line item	29-1060	YES	Physicians and surgeons	Rollup
27-1022	YES	Fashion designers	Line item	29-1061	YES	Anesthesiologists	Collapse
27-1023	YES	Floral designers	Line item	29-1062	YES	Family and general practitioners	Collapse
27-1024	YES	Graphic designers	Line item	29-1063	YES	Internists, general	Collapse
27-1025	YES	Interior designers	Line item	29-1064	YES	Obstetricians and gynecologists	Collapse
27-1026	YES	Merchandise displayers and window trimmers	Line item	29-1065	YES	Pediatricians, general	Collapse
27-1027	YES	Set and exhibit designers	Line item	29-1066	YES	Psychiatrists	Collapse
27-1099	NO	All other art and design workers	Line item	29-1067	YES	Surgeons	Collapse
27-2000	YES	Entertainers and performers, sports and related occupations	Summary	29-1069	YES	Physicians and surgeons, all other	Collapse
27-2010	YES	Actors, producers, and directors	Summary	29-1071	YES	Physician assistants	Line item
27-2011	YES	Actors	Line item	29-1081	YES	Podiatrists	Line item
27-2012	YES	Producers and directors	Line item	29-1111	YES	Registered nurses	Line item
27-2020	YES	Athletes, coaches, umpires, and related workers	Summary	29-1120	YES	Therapists	Summary
27-2021	YES	Athletes and sports competitors	Line item	29-1121	YES	Audiologists	Line item
27-2022	YES	Coaches and scouts	Line item	29-1122	YES	Occupational therapists	Line item
27-2023	YES	Umpires, referees, and other sports officials	Line item	29-1123	YES	Physical therapists	Line item
27-2030	YES	Dancers and choreographers	Summary	29-1124	YES	Radiation therapists	Line item
27-2031	YES	Dancers	Line item	29-1125	YES	Recreational therapists	Line item
27-2032	YES	Choreographers	Line item	29-1126	YES	Respiratory therapists	Line item
27-2040	YES	Musicians, singers, and related workers	Summary	29-1127	YES	Speech-language pathologists	Line item
27-2041	YES	Music directors and composers	Line item	29-1131	YES	Veterinarians	Line item
27-2042	YES	Musicians and singers	Line item	29-1198	NO	All other health diagnosing and treating practitioners	Line item
27-2099	YES	All other entertainers and performers, sports and related workers	Line item	29-2000	YES	Health technologists and technicians	Summary
27-3000	YES	Media and communication occupations	Summary	29-2010	YES	Clinical laboratory technologists and technicians	Summary
27-3010	YES	Announcers	Line item	29-2011	YES	Medical and clinical laboratory technologists	Line item
27-3020	YES	News analysts, reporters, and correspondents	Line item	29-2012	YES	Medical and clinical laboratory technicians	Line item
27-3031	YES	Public relations specialists	Line item	29-2021	YES	Dental hygienists	Line item
27-3040	YES	Writers and editors	Summary	29-2030	YES	Diagnostic related technologists and technicians	Summary
27-3041	YES	Editors	Line item	29-2031	YES	Cardiovascular technologists and technicians	Line item
27-3042	YES	Technical writers	Line item	29-2032	YES	Diagnostic medical sonographers	Line item
27-3043	YES	Writers and authors	Line item	29-2033	YES	Nuclear medicine technologists	Line item
27-3090	YES	Miscellaneous media and communications workers	Summary	29-2034	YES	Radiologic technologists and technicians	Line item
27-3091	YES	Interpreters and translators	Line item	29-2041	YES	Emergency medical technicians and paramedics	Line item
27-3099	YES	All other media and communication workers	Line item	29-2050	YES	Health diagnosing and treating practitioner support technicians	Summary
27-4000	YES	Media and communication equipment occupations	Summary	29-2051	YES	Dietetic technicians	Line item
27-4010	YES	Broadcast and sound engineering technicians and radio operators	Summary	29-2052	YES	Pharmacy technicians	Line item
27-4011	YES	Audio and video equipment technicians	Line item	29-2053	YES	Psychiatric technicians	Line item
27-4012	YES	Broadcast technicians	Line item	29-2054	YES	Respiratory therapy technicians	Line item
27-4013	YES	Radio operators	Line item	29-2055	YES	Surgical technologists	Line item
27-4014	YES	Sound engineering technicians	Line item	29-2056	YES	Veterinary technologists and technicians	Line item
27-4021	YES	Photographers	Line item	29-2061	YES	Licensed practical and licensed vocational nurses	Line item
27-4030	YES	Television, video, and motion picture camera operators and editors	Summary	29-2071	YES	Medical records and health information technicians	Line item
27-4031	YES	Camera operators, television, video, and motion picture	Line item	29-2081	YES	Opticians, dispensing	Line item
27-4032	YES	Film and video editors	Line item	29-2090	YES	Miscellaneous health technologists and technicians	Summary

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
29-2091	YES	Orthotists and prosthetists.....	Line item	33-9011	YES	Animal control workers.....	Line item
29-9000	YES	Other healthcare practitioners and technical occupations.....	Summary	33-9021	YES	Private detectives and investigators.....	Line item
29-9010	YES	Occupational health and safety specialists and technicians.....	Line item	33-9030	YES	Security guards and gaming surveillance officers.....	Summary
29-9090	YES	Miscellaneous health practitioners and technical workers.....	Summary	33-9031	YES	Gaming surveillance officers and gaming investigators.....	Line item
29-9091	YES	Athletic trainers.....	Line item	33-9032	YES	Security guards.....	Line item
29-9199	NO	All other health practitioners and technical workers.....	Line item	33-9091	YES	Crossing guards.....	Line item
31-3900	NO	Service occupations.....	Summary	33-9095	NO	All other protective service workers.....	Line item
31-0000	YES	Healthcare support occupations.....	Summary	35-0000	YES	Food preparation and serving related occupations.....	Summary
31-1000	YES	Nursing, psychiatric, and home health aides.....	Summary	35-1000	YES	Supervisors, food preparation and serving workers.....	Summary
31-1011	YES	Home health aides.....	Line item	35-1011	YES	Chefs and head cooks.....	Line item
31-1012	YES	Nursing aides, orderlies, and attendants.....	Line item	35-1012	YES	First-line supervisors/managers of food preparation and serving workers.....	Line item
31-1013	YES	Psychiatric aides.....	Line item	35-2000	YES	Cooks and food preparation workers.....	Summary
31-2000	YES	Occupational and physical therapist assistants and aides.....	Summary	35-2010	YES	Cooks.....	Summary
31-2010	YES	Occupational therapist assistants and aides.....	Summary	35-2011	YES	Cooks, fast food.....	Line item
31-2011	YES	Occupational therapist assistants.....	Line item	35-2012	YES	Cooks, institution and cafeteria.....	Line item
31-2012	YES	Occupational therapist aides.....	Line item	35-2013	YES	Cooks, private household.....	Line item
31-2020	YES	Physical therapist assistants and aides.....	Summary	35-2014	YES	Cooks, restaurant.....	Line item
31-2021	YES	Physical therapist assistants.....	Line item	35-2015	YES	Cooks, short order.....	Line item
31-2022	YES	Physical therapist aides.....	Line item	35-2021	YES	Food preparation workers.....	Line item
31-9000	YES	Other healthcare support occupations.....	Summary	35-3000	YES	Food and beverage serving workers.....	Summary
31-9011	YES	Massage therapists.....	Line item	35-3011	YES	Bartenders.....	Line item
31-9090	YES	Miscellaneous healthcare support occupations.....	Summary	35-3020	YES	Fast food and counter workers.....	Summary
31-9091	YES	Dental assistants.....	Line item	35-3021	YES	Combined food preparation and serving workers, including fast food.....	Line item
31-9092	YES	Medical assistants.....	Line item	35-3022	YES	Counter attendants, cafeteria, food concession, and coffee shop.....	Line item
31-9093	YES	Medical equipment preparers.....	Line item	35-3031	YES	Waiters and waitresses.....	Line item
31-9094	YES	Medical transcriptionists.....	Line item	35-3041	YES	Food servers, nonrestaurant.....	Line item
31-9095	YES	Pharmacy aides.....	Line item	35-9000	YES	Other food preparation and serving related workers.....	Summary
31-9096	YES	Veterinary assistants and laboratory animal caretakers.....	Line item	35-9011	YES	Dining room and cafeteria attendants and bartender helpers.....	Line item
33-0000	YES	Protective service occupations.....	Summary	35-9021	YES	Dishwashers.....	Line item
33-1000	YES	First-line supervisors/managers, protective service workers.....	Summary	35-9031	YES	Hosts and hostesses, restaurant, lounge, and coffee shop.....	Line item
33-1010	YES	First-line supervisors/managers, law enforcement workers.....	Summary	35-9098	NO	All other food preparation and serving related workers.....	Line item
33-1011	YES	First-line supervisors/managers of correctional officers.....	Line item	37-0000	YES	Building and grounds cleaning and maintenance occupations.....	Summary
33-1012	YES	First-line supervisors/managers of police and detectives.....	Line item	37-1000	YES	Supervisors, building and grounds cleaning and maintenance workers.....	Summary
33-1021	YES	First-line supervisors/managers of fire fighting and prevention workers.....	Line item	37-1011	YES	First-line supervisors/managers of housekeeping and janitorial workers.....	Line item
33-1099	YES	All other first-line supervisors/managers, protective service workers.....	Line item	37-1012	YES	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers.....	Line item
33-2000	YES	Fire fighting and prevention workers.....	Summary	37-2000	YES	Building cleaning and pest control workers.....	Summary
33-2011	YES	Fire fighters.....	Line item	37-2010	YES	Building cleaning workers.....	Summary
33-2020	YES	Fire inspectors.....	Rollup	37-2011	YES	Janitors and cleaners, except maids and housekeeping cleaners.....	Line item
33-2021	YES	Fire inspectors and investigators.....	Collapse	37-2012	YES	Maids and housekeeping cleaners.....	Line item
33-2022	YES	Forest fire inspectors and prevention specialists.....	Collapse	37-2021	YES	Pest control workers.....	Line item
33-3000	YES	Law enforcement workers.....	Summary	37-3000	YES	Grounds maintenance workers.....	Summary
33-3010	YES	Bailiffs, correctional officers, and jailers.....	Summary	37-3010	YES	Grounds maintenance workers.....	Summary
33-3011	YES	Bailiffs.....	Line item	37-3011	YES	Landscaping and groundskeeping workers.....	Line item
33-3012	YES	Correctional officers and jailers.....	Line item	37-3012	YES	Pesticide handlers, sprayers, and applicators, vegetation.....	Line item
33-3021	YES	Detectives and criminal investigators.....	Line item	37-3013	YES	Tree trimmers and pruners.....	Line item
33-3031	YES	Fish and game wardens.....	Line item	37-9099	NO	All other building and grounds cleaning and maintenance workers.....	Line item
33-3041	YES	Parking enforcement workers.....	Line item	39-0000	YES	Personal care and service occupations.....	Summary
33-3050	YES	Police officers.....	Summary				
33-3051	YES	Police and sheriff's patrol officers.....	Line item				
33-3052	YES	Transit and railroad police.....	Line item				
33-9000	YES	Other protective service workers.....	Summary				

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
39-1000	YES	Supervisors, personal care and service workers	Summary	41-1012	YES	First-line supervisors/managers of non-retail sales workers	Line item
39-1010	YES	First-line supervisors/managers of gaming workers	Summary	41-2000	YES	Retail sales workers	Summary
39-1011	YES	Gaming supervisors	Line item	41-2010	YES	Cashiers	Summary
39-1012	YES	Slot key persons	Line item	41-2011	YES	Cashiers, except gaming	Line item
39-1021	YES	First-line supervisors/managers of personal service workers	Line item	41-2012	YES	Gaming change persons and booth cashiers	Line item
39-2000	YES	Animal care and service workers	Summary	41-2020	YES	Counter and rental clerks and parts salespersons	Summary
39-2011	YES	Animal trainers	Line item	41-2021	YES	Counter and rental clerks	Line item
39-2021	YES	Nonfarm animal caretakers	Line item	41-2022	YES	Parts salespersons	Line item
39-3000	YES	Entertainment attendants and related workers	Summary	41-2031	YES	Retail salespersons	Line item
39-3010	YES	Gaming services workers	Summary	41-3000	YES	Sales representatives, services	Summary
39-3011	YES	Gaming dealers	Line item	41-3011	YES	Advertising sales agents	Line item
39-3012	YES	Gaming and sports book writers and runners	Line item	41-3021	YES	Insurance sales agents	Line item
39-3021	YES	Motion picture projectionists	Line item	41-3031	YES	Securities, commodities, and financial services sales agents	Line item
39-3031	YES	Ushers, lobby attendants, and ticket takers	Line item	41-3041	YES	Travel agents	Line item
39-3090	YES	Miscellaneous entertainment attendants and related workers	Summary	41-4000	YES	Sales representatives, wholesale and manufacturing	Summary
39-3091	YES	Amusement and recreation attendants	Line item	41-4011	YES	Sales representatives, wholesale and manufacturing, technical and scientific products	Line item
39-3092	YES	Costume attendants	Line item	41-4012	YES	Sales representatives, wholesale and manufacturing, except technical and scientific products	Line item
39-3093	YES	Locker room, coatroom, and dressing room attendants	Line item	41-9000	YES	Other sales and related workers	Summary
39-3199	NO	All other gaming service workers	Line item	41-9010	YES	Models, demonstrators, and product promoters	Summary
39-4000	YES	Funeral service workers	Summary	41-9011	YES	Demonstrators and product promoters	Line item
39-4011	YES	Embalmers	Line item	41-9012	YES	Models	Line item
39-4021	YES	Funeral attendants	Line item	41-9020	YES	Real estate brokers and sales agents	Summary
39-5000	YES	Personal appearance workers	Summary	41-9021	YES	Real estate brokers	Line item
39-5010	YES	Barbers and cosmetologists	Summary	41-9022	YES	Real estate sales agents	Line item
39-5011	YES	Barbers	Line item	41-9031	YES	Sales engineers	Line item
39-5012	YES	Hairdressers, hairstylists, and cosmetologists	Line item	41-9041	YES	Telemarketers	Line item
39-5090	YES	Miscellaneous personal appearance workers	Summary	41-9091	YES	Door-to-door sales workers, news and street vendors, and related workers	Line item
39-5091	YES	Makeup artists, theatrical and performance	Line item	41-9098	NO	All other sales and related workers	Line item
39-5092	YES	Manicurists and pedicurists	Line item	43-00	YES	Office and administrative support occupations	Summary
39-5093	YES	Shampooers	Line item	43-1000	YES	Supervisors, office and administrative support workers	Summary
39-5094	YES	Skin care specialists	Line item	43-1011	YES	First-line supervisors/managers of office and administrative support workers	Line item
39-6000	YES	Transportation, tourism, and lodging attendants	Summary	43-2000	YES	Communications equipment operators	Summary
39-6010	YES	Baggage porters, bellhops, and concierges	Summary	43-2011	YES	Switchboard operators, including answering service	Line item
39-6011	YES	Baggage porters and bellhops	Line item	43-2021	YES	Telephone operators	Line item
39-6012	YES	Concierges	Line item	43-2099	YES	All other communications equipment operators	Line item
39-6020	YES	Tour and travel guides	Summary	43-3000	YES	Financial clerks	Summary
39-6021	YES	Tour guides and escorts	Line item	43-3011	YES	Bill and account collectors	Line item
39-6022	YES	Travel guides	Line item	43-3021	YES	Billing and posting clerks and machine operators	Line item
39-6030	YES	Transportation attendants	Summary	43-3031	YES	Bookkeeping, accounting, and auditing clerks	Line item
39-6031	YES	Flight attendants	Line item	43-3041	YES	Gaming cage workers	Line item
39-6032	YES	Transportation attendants, except flight attendants and baggage porters	Line item	43-3051	YES	Payroll and timekeeping clerks	Line item
39-9000	YES	Other personal care and service workers	Summary	43-3061	YES	Procurement clerks	Line item
39-9011	YES	Child care workers	Line item	43-3071	YES	Tellers	Line item
39-9021	YES	Personal and home care aides	Line item	43-4000	YES	Information and record clerks	Summary
39-9030	YES	Recreation and fitness workers	Summary	43-4011	YES	Brokerage clerks	Line item
39-9031	YES	Fitness trainers and aerobics instructors	Line item	43-4021	YES	Correspondence clerks	Line item
39-9032	YES	Recreation workers	Line item	43-4031	YES	Court, municipal, and license clerks	Line item
39-9041	YES	Residential advisors	Line item	43-4041	YES	Credit authorizers, checkers, and clerks	Line item
39-9099	YES	Personal care and service workers, all other	Line item	43-4051	YES	Customer service representatives	Line item
41-0000	YES	Sales and related occupations	Summary				
41-1000	YES	Supervisors, sales workers	Summary				
41-1011	YES	First-line supervisors/managers of retail sales workers	Line item				

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
43-4061	YES	Eligibility interviewers, government programs.....	Line item	45-1011	YES	First-line supervisors/managers of farming, fishing, and forestry workers.....	Collapse
43-4071	YES	File clerks.....	Line item	45-1012	YES	Farm labor contractors.....	Collapse
43-4081	YES	Hotel, motel, and resort desk clerks.....	Line item	45-2000	YES	Agricultural workers.....	Summary
43-4111	YES	Interviewers, except eligibility and loan.....	Line item	45-2011	YES	Agricultural inspectors.....	Line item
43-4121	YES	Library assistants, clerical.....	Line item	45-2021	YES	Animal breeders.....	Line item
43-4131	YES	Loan interviewers and clerks.....	Line item	45-2041	YES	Graders and sorters, agricultural products.....	Line item
43-4141	YES	New accounts clerks.....	Line item	45-2090	YES	Miscellaneous agricultural workers.....	Summary
43-4151	YES	Order clerks.....	Line item	45-2091	YES	Agricultural equipment operators.....	Line item
43-4161	YES	Human resources assistants, except payroll and timekeeping.....	Line item	45-2092	YES	Farmworkers and laborers, crop, nursery, and greenhouse.....	Line item
43-4171	YES	Receptionists and information clerks.....	Line item	45-2093	YES	Farmworkers, farm and ranch animals.....	Line item
43-4181	YES	Reservation and transportation ticket agents and travel clerks.....	Line item	45-3000	YES	Fishing and hunting workers.....	Summary
43-4999	NO	All other financial, information, and record clerks.....	Line item	45-3011	YES	Fishers and related fishing workers.....	Line item
43-5000	YES	Material recording, scheduling, dispatching, and distributing occupations.....	Summary	45-3021	YES	Hunters and trappers.....	Line item
43-5011	YES	Cargo and freight agents.....	Line item	45-4000	YES	Forest, conservation, and logging workers.....	Summary
43-5021	YES	Couriers and messengers.....	Line item	45-4011	YES	Forest and conservation workers.....	Line item
43-5030	YES	Dispatchers.....	Summary	45-4020	YES	Logging workers.....	Summary
43-5031	YES	Police, fire, and ambulance dispatchers.....	Line item	45-4021	YES	Fallers.....	Line item
43-5032	YES	Dispatchers, except police, fire, and ambulance.....	Line item	45-4022	YES	Logging equipment operators.....	Line item
43-5041	YES	Meter readers, utilities.....	Line item	45-4023	YES	Log graders and scalers.....	Line item
43-5050	YES	Postal service workers.....	Summary	45-9099	NO	All other farming, fishing, and forestry workers.....	Line item
43-5051	YES	Postal service clerks.....	Line item	47-0000	YES	Construction and extraction occupations.....	Summary
43-5052	YES	Postal service mail carriers.....	Line item	47-1000	YES	Supervisors, construction and extraction workers.....	Summary
43-5053	YES	Postal service mail sorters, processors, and processing machine operators.....	Line item	47-1011	YES	First-line supervisors/managers of construction trades and extraction workers.....	Line item
43-5061	YES	Production, planning, and expediting clerks.....	Line item	47-2000	YES	Construction trades and related workers.....	Summary
43-5071	YES	Shipping, receiving, and traffic clerks.....	Line item	47-2011	YES	Boilermakers.....	Line item
43-5081	YES	Stock clerks and order fillers.....	Line item	47-2020	YES	Brickmasons, blockmasons, and stonemasons.....	Summary
43-5111	YES	Weighers, measurers, checkers, and samplers, recordkeeping.....	Line item	47-2021	YES	Brickmasons and blockmasons.....	Line item
43-5199	NO	All other material recording, scheduling, dispatching, and distributing workers.....	Line item	47-2022	YES	Stonemasons.....	Line item
43-6000	YES	Secretaries and administrative assistants.....	Summary	47-2031	YES	Carpenters.....	Line item
43-6011	YES	Executive secretaries and administrative assistants.....	Line item	47-2040	YES	Carpet, floor, and tile installers and finishers.....	Summary
43-6012	YES	Legal secretaries.....	Line item	47-2041	YES	Carpet installers.....	Line item
43-6013	YES	Medical secretaries.....	Line item	47-2042	YES	Floor layers, except carpet, wood, and hard tiles.....	Line item
43-6014	YES	Secretaries, except legal, medical, and executive.....	Line item	47-2043	YES	Floor sanders and finishers.....	Line item
43-9000	YES	Other office and administrative support workers.....	Summary	47-2044	YES	Tile and marble setters.....	Line item
43-9011	YES	Computer operators.....	Line item	47-2050	YES	Cement masons, concrete finishers, and terrazzo workers.....	Summary
43-9020	YES	Data entry and information processing workers.....	Summary	47-2051	YES	Cement masons and concrete finishers.....	Line item
43-9021	YES	Data entry keyers.....	Line item	47-2053	YES	Terrazzo workers and finishers.....	Line item
43-9022	YES	Word processors and typists.....	Line item	47-2061	YES	Construction laborers.....	Line item
43-9031	YES	Desktop publishers.....	Line item	47-2070	YES	Construction equipment operators.....	Summary
43-9041	YES	Insurance claims and policy processing clerks.....	Line item	47-2071	YES	Paving, surfacing, and tamping equipment operators.....	Line item
43-9051	YES	Mail clerks and mail machine operators, except postal service.....	Line item	47-2072	YES	Pile-driver operators.....	Line item
43-9061	YES	Office clerks, general.....	Line item	47-2073	YES	Operating engineers and other construction equipment operators.....	Line item
43-9071	YES	Office machine operators, except computer.....	Line item	47-2080	YES	Drywall installers, ceiling tile installers, and tapers.....	Summary
43-9081	YES	Proofreaders and copy markers.....	Line item	47-2081	YES	Drywall and ceiling tile installers.....	Line item
43-9111	YES	Statistical assistants.....	Line item	47-2082	YES	Tapers.....	Line item
43-9999	NO	All other secretaries, administrative assistants, and other office support workers.....	Line item	47-2111	YES	Electricians.....	Line item
45-0000	YES	Farming, fishing, and forestry occupations.....	Summary	47-2121	YES	Glaziers.....	Line item
45-1000	YES	Supervisors, farming, fishing, and forestry workers.....	Rollup	47-2130	YES	Insulation workers.....	Line item
				47-2140	YES	Painters and paperhangers.....	Summary
				47-2141	YES	Painters, construction and maintenance.....	Line item
				47-2142	YES	Paperhangers.....	Line item
				47-2150	YES	Pipelayers, plumbers, pipefitters, and steamfitters.....	Summary
				47-2151	YES	Pipelayers.....	Line item

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
47-2152	YES	Plumbers, pipefitters, and steamfitters	Line item	49-2090	YES	Miscellaneous electrical and electronic equipment mechanics, installers, and repairers	Summary
47-2161	YES	Plasterers and stucco masons	Line item	49-2091	YES	Avionics technicians	Line item
47-2171	YES	Reinforcing iron and rebar workers	Line item	49-2092	YES	Electric motor, power tool, and related repairers	Line item
47-2181	YES	Roofers	Line item	49-2093	YES	Electrical and electronics installers and repairers, transportation equipment	Line item
47-2211	YES	Sheet metal workers	Line item	49-2094	YES	Electrical and electronics repairers, commercial and industrial equipment	Line item
47-2221	YES	Structural iron and steel workers	Line item	49-2095	YES	Electrical and electronics repairers, powerhouse, substation, and relay	Line item
47-3000	YES	Helpers, construction trades	Summary	49-2096	YES	Electronic equipment installers and repairers, motor vehicles	Line item
47-3010	YES	Helpers, construction trades	Summary	49-2097	YES	Electronic home entertainment equipment installers and repairers	Line item
47-3011	YES	Helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters	Line item	49-2098	YES	Security and fire alarm systems installers	Line item
47-3012	YES	Helpers—carpenters	Line item	49-2099	NO	All other electrical and electronic equipment mechanics, installers, and repairers	Line item
47-3013	YES	Helpers—electricians	Line item	49-3000	YES	Vehicle and mobile equipment mechanics, installers, and repairers	Summary
47-3014	YES	Helpers—painters, paperhangers, plasterers, and stucco masons	Line item	49-3011	YES	Aircraft mechanics and service technicians	Line item
47-3015	YES	Helpers—pipelayers, plumbers, pipefitters, and steamfitters	Line item	49-3020	YES	Automotive technicians and repairers	Summary
47-3016	YES	Helpers—roofers	Line item	49-3021	YES	Automotive body and related repairers	Line item
47-3019	YES	All other helpers, construction trades	Line item	49-3022	YES	Automotive glass installers and repairers	Line item
47-4000	YES	Other construction and related workers	Summary	49-3023	YES	Automotive service technicians and mechanics	Line item
47-4011	YES	Construction and building inspectors	Line item	49-3031	YES	Bus and truck mechanics and diesel engine specialists	Line item
47-4021	YES	Elevator installers and repairers	Line item	49-3040	YES	Heavy vehicle and mobile equipment service technicians and mechanics	Summary
47-4031	YES	Fence erectors	Line item	49-3041	YES	Farm equipment mechanics	Line item
47-4041	YES	Hazardous materials removal workers	Line item	49-3042	YES	Mobile heavy equipment mechanics, except engines	Line item
47-4051	YES	Highway maintenance workers	Line item	49-3043	YES	Rail car repairers	Line item
47-4061	YES	Rail-track laying and maintenance equipment operators	Line item	49-3050	YES	Small engine mechanics	Summary
47-4071	YES	Septic tank servicers and sewer pipe cleaners	Line item	49-3051	YES	Motorboat mechanics	Line item
47-4090	YES	Miscellaneous construction and related workers	Summary	49-3052	YES	Motorcycle mechanics	Line item
47-4091	YES	Segmental pavers	Line item	49-3053	YES	Outdoor power equipment and other small engine mechanics	Line item
47-4999	NO	All other construction trades and related workers	Line item	49-3090	YES	Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers	Summary
47-5000	YES	Extraction workers	Summary	49-3091	YES	Bicycle repairers	Line item
47-5010	YES	Derrick, rotary drill, and service unit operators, oil, gas, and mining	Summary	49-3092	YES	Recreational vehicle service technicians	Line item
47-5011	YES	Derrick operators, oil and gas	Line item	49-3093	YES	Tire repairers and changers	Line item
47-5012	YES	Rotary drill operators, oil and gas	Line item	49-3099	NO	All other vehicle and mobile equipment mechanics, installers, and repairers	Line item
47-5013	YES	Service unit operators, oil, gas, and mining	Line item	49-9000	YES	Other installation, maintenance, and repair occupations	Summary
47-5021	YES	Earth drillers, except oil and gas	Line item	49-9010	YES	Control and valve installers and repairers	Summary
47-5031	YES	Explosives workers, ordnance handling experts, and blasters	Line item	49-9011	YES	Mechanical door repairers	Line item
47-5040	YES	Mining machine operators	Summary	49-9012	YES	Control and valve installers and repairers, except mechanical door	Line item
47-5041	YES	Continuous mining machine operators	Line item	49-9021	YES	Heating, air conditioning, and refrigeration mechanics and installers	Line item
47-5042	YES	Mine cutting and channeling machine operators	Line item	49-9031	YES	Home appliance repairers	Line item
47-5049	YES	All other mining machine operators	Line item	49-9040	YES	Industrial machinery installation, repair, and maintenance workers	Summary
47-5051	YES	Rock splitters, quarry	Line item	49-9041	YES	Industrial machinery mechanics	Line item
47-5061	YES	Roof bolters, mining	Line item				
47-5071	YES	Roustabouts, oil and gas	Line item				
47-5081	YES	Helpers—extraction workers	Line item				
47-5099	YES	Extraction workers, all other	Line item				
49-0000	YES	Installation, maintenance, and repair occupations	Summary				
49-1000	YES	Supervisors of installation, maintenance, and repair workers	Summary				
49-1011	YES	First-line supervisors/managers of mechanics, installers, and repairers	Line item				
49-2000	YES	Electrical and electronic equipment mechanics, installers, and repairers	Summary				
49-2011	YES	Computer, automated teller, and office machine repairers	Line item				
49-2020	YES	Radio and telecommunications equipment installers and repairers	Summary				
49-2021	YES	Radio mechanics	Line item				
49-2022	YES	Telecommunications equipment installers and repairers, except line installers	Line item				

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
49-9042	YES	Maintenance and repair workers, general ...	Line item	51-3093	YES	Food cooking machine operators and tenders	Line item
49-9043	YES	Maintenance workers, machinery	Line item	51-3099	NO	All other food processing workers	Line item
49-9044	YES	Millwrights	Line item	51-4000	YES	Metal workers and plastic workers	Summary
49-9045	YES	Refractory materials repairers, except brickmasons	Line item	51-4010	YES	Computer control programmers and operators	Summary
49-9050	YES	Line installers and repairers	Summary	51-4011	YES	Computer-controlled machine tool operators, metal and plastic	Line item
49-9051	YES	Electrical power-line installers and repairers	Line item	51-4012	YES	Numerical tool and process control programmers	Line item
49-9052	YES	Telecommunications line installers and repairers	Line item	51-4020	YES	Forming machine setters, operators, and tenders, metal and plastic	Summary
49-9060	YES	Precision instrument and equipment repairers	Summary	51-4021	YES	Extruding and drawing machine setters, operators, and tenders, metal and plastic	Line item
49-9061	YES	Camera and photographic equipment repairers	Line item	51-4022	YES	Forging machine setters, operators, and tenders, metal and plastic	Line item
49-9062	YES	Medical equipment repairers	Line item	51-4023	YES	Rolling machine setters, operators, and tenders, metal and plastic	Line item
49-9063	YES	Musical instrument repairers and tuners	Line item	51-4030	YES	Machine tool cutting setters, operators, and tenders, metal and plastic	Summary
49-9064	YES	Watch repairers	Line item	51-4031	YES	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	Line item
49-9069	YES	All other precision instrument and equipment repairers	Line item	51-4032	YES	Drilling and boring machine tool setters, operators, and tenders, metal and plastic	Line item
49-9090	YES	Miscellaneous installation, maintenance, and repair workers	Summary	51-4033	YES	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	Line item
49-9091	YES	Coin, vending, and amusement machine servicers and repairers	Line item	51-4034	YES	Lathe and turning machine tool setters, operators, and tenders, metal and plastic	Line item
49-9092	YES	Commercial divers	Line item	51-4035	YES	Milling and planing machine setters, operators, and tenders, metal and plastic	Line item
49-9093	YES	Fabric menders, except garment	Line item	51-4041	YES	Machinists	Line item
49-9094	YES	Locksmiths and safe repairers	Line item	51-4050	YES	Metal furnace and kiln operators and tenders	Summary
49-9095	YES	Manufactured building and mobile home installers	Line item	51-4051	YES	Metal-refining furnace operators and tenders	Line item
49-9096	YES	Riggers	Line item	51-4052	YES	Pourers and casters, metal	Line item
49-9097	YES	Signal and track switch repairers	Line item	51-4060	YES	Model makers and patternmakers, metal and plastic	Summary
49-9098	YES	Helpers—Installation, maintenance, and repair workers	Line item	51-4061	YES	Model makers, metal and plastic	Line item
49-9099	YES	Installation, maintenance, and repair workers, all other	Line item	51-4062	YES	Patternmakers, metal and plastic	Line item
51-0000	YES	Production occupations	Summary	51-4070	YES	Molders and molding machine setters, operators, and tenders, metal and plastic	Summary
51-1000	YES	Supervisors, production workers	Summary	51-4071	YES	Foundry mold and coremakers	Line item
51-1011	YES	First-line supervisors/managers of production and operating workers	Line item	51-4072	YES	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	Line item
51-2000	YES	Assemblers and fabricators	Summary	51-4081	YES	Multiple machine tool setters, operators, and tenders, metal and plastic	Line item
51-2011	YES	Aircraft structure, surfaces, rigging, and systems assemblers	Line item	51-4111	YES	Tool and die makers	Line item
51-2020	YES	Electrical, electronics, and electromechanical assemblers	Summary	51-4120	YES	Welding, soldering, and brazing workers	Summary
51-2021	YES	Coil winders, tapers, and finishers	Line item	51-4121	YES	Welders, cutters, solderers, and brazers	Line item
51-2022	YES	Electrical and electronic equipment assemblers	Line item	51-4122	YES	Welding, soldering, and brazing machine setters, operators, and tenders	Line item
51-2023	YES	Electromechanical equipment assemblers	Line item	51-4190	YES	Miscellaneous metalworkers and plastic workers	Summary
51-2031	YES	Engine and other machine assemblers	Line item	51-4191	YES	Heat treating equipment setters, operators, and tenders, metal and plastic	Line item
51-2041	YES	Structural metal fabricators and fitters	Line item	51-4192	YES	Lay-out workers, metal and plastic	Line item
51-2090	YES	Miscellaneous assemblers and fabricators	Summary				
51-2091	YES	Fiberglass laminators and fabricators	Line item				
51-2092	YES	Team assemblers	Line item				
51-2093	YES	Timing device assemblers, adjusters, and calibrators	Line item				
51-2099	YES	All other assemblers and fabricators	Line item				
51-3000	YES	Food processing occupations	Summary				
51-3011	YES	Bakers	Line item				
51-3020	YES	Butchers and other meat, poultry, and fish processing workers	Summary				
51-3021	YES	Butchers and meat cutters	Line item				
51-3022	YES	Meat, poultry, and fish cutters and trimmers	Line item				
51-3023	YES	Slaughterers and meat packers	Line item				
51-3090	YES	Miscellaneous food processing workers	Summary				
51-3091	YES	Food and tobacco roasting, baking, and drying machine operators and tenders	Line item				
51-3092	YES	Food batchmakers	Line item				

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
51-4193	YES	Plating and coating machine setters, operators, and tenders, metal and plastic.....	Line item	51-8031	YES	Water and liquid waste treatment plant and system operators.....	Line item
51-4194	YES	Tool grinders, filers, and sharpeners.....	Line item	51-8090	YES	Miscellaneous plant and system operators.....	Summary
51-4199	YES	All other metal workers and plastic workers.....	Line item	51-8091	YES	Chemical plant and system operators.....	Line item
51-5000	YES	Printing occupations.....	Summary	51-8092	YES	Gas plant operators.....	Line item
51-5010	YES	Bookbinders and bindery workers.....	Summary	51-8093	YES	Petroleum pump system operators, refinery operators, and gaugers.....	Line item
51-5011	YES	Bindery workers.....	Line item	51-8099	YES	All other plant and system operators.....	Line item
51-5012	YES	Bookbinders.....	Line item	51-9000	YES	Other production occupations.....	Summary
51-5020	YES	Printers.....	Summary	51-9010	YES	Chemical processing machine setters, operators, and tenders.....	Summary
51-5021	YES	Job printers.....	Line item	51-9011	YES	Chemical equipment operators and tenders.....	Line item
51-5022	YES	Prepress technicians and workers.....	Line item	51-9012	YES	Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders.....	Line item
51-5023	YES	Printing machine operators.....	Line item	51-9020	YES	Crushing, grinding, polishing, mixing, and blending workers.....	Summary
51-5099	NO	All other printing workers.....	Line item	51-9021	YES	Crushing, grinding, and polishing machine setters, operators, and tenders.....	Line item
51-6000	YES	Textile, apparel, and furnishings occupations.....	Summary	51-9022	YES	Grinding and polishing workers, hand.....	Line item
51-6011	YES	Laundry and dry-cleaning workers.....	Line item	51-9023	YES	Mixing and blending machine setters, operators, and tenders.....	Line item
51-6021	YES	Pressers, textile, garment, and related materials.....	Line item	51-9030	YES	Cutting workers.....	Summary
51-6031	YES	Sewing machine operators.....	Line item	51-9031	YES	Cutters and trimmers, hand.....	Line item
51-6040	YES	Shoe and leather workers.....	Summary	51-9032	YES	Cutting and slicing machine setters, operators, and tenders.....	Line item
51-6041	YES	Shoe and leather workers and repairers.....	Line item	51-9041	YES	Extruding, forming, pressing, and compacting machine setters, operators, and tenders.....	Line item
51-6042	YES	Shoe machine operators and tenders.....	Line item	51-9051	YES	Furnace, kiln, oven, drier, and kettle operators and tenders.....	Line item
51-6050	YES	Tailors, dressmakers, and sewers.....	Summary	51-9061	YES	Inspectors, testers, sorters, samplers, and weighers.....	Line item
51-6051	YES	Sewers, hand.....	Line item	51-9071	YES	Jewelers and precious stone and metal workers.....	Line item
51-6052	YES	Tailors, dressmakers, and custom sewers.....	Line item	51-9080	YES	Medical, dental, and ophthalmic laboratory technicians.....	Summary
51-6060	YES	Textile machine setters, operators, and tenders.....	Summary	51-9081	YES	Dental laboratory technicians.....	Line item
51-6061	YES	Textile bleaching and dyeing machine operators and tenders.....	Line item	51-9082	YES	Medical appliance technicians.....	Line item
51-6062	YES	Textile cutting machine setters, operators, and tenders.....	Line item	51-9083	YES	Ophthalmic laboratory technicians.....	Line item
51-6063	YES	Textile knitting and weaving machine setters, operators, and tenders.....	Line item	51-9111	YES	Packaging and filling machine operators and tenders.....	Line item
51-6064	YES	Textile winding, twisting, and drawing out machine setters, operators, and tenders.....	Line item	51-9120	YES	Painting workers.....	Summary
51-6090	YES	Miscellaneous textile, apparel, and furnishings workers.....	Summary	51-9121	YES	Coating, painting, and spraying machine setters, operators, and tenders.....	Line item
51-6091	YES	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers.....	Line item	51-9122	YES	Painters, transportation equipment.....	Line item
51-6092	YES	Fabric and apparel patternmakers.....	Line item	51-9123	YES	Painting, coating, and decorating workers.....	Line item
51-6093	YES	Upholsterers.....	Line item	51-9130	YES	Photographic process workers and processing machine operators.....	Summary
51-6099	YES	All other textile, apparel, and furnishings workers.....	Line item	51-9131	YES	Photographic process workers.....	Line item
51-7000	YES	Woodworkers.....	Summary	51-9132	YES	Photographic processing machine operators.....	Line item
51-7011	YES	Cabinetmakers and bench carpenters.....	Line item	51-9141	YES	Semiconductor processors.....	Line item
51-7021	YES	Furniture finishers.....	Line item	51-9190	YES	Miscellaneous production workers.....	Summary
51-7030	YES	Model makers and patternmakers, wood.....	Summary	51-9191	YES	Cementing and gluing machine operators and tenders.....	Line item
51-7031	YES	Model makers, wood.....	Line item	51-9192	YES	Cleaning, washing, and metal pickling equipment operators and tenders.....	Line item
51-7032	YES	Patternmakers, wood.....	Line item	51-9193	YES	Cooling and freezing equipment operators and tenders.....	Line item
51-7040	YES	Woodworking machine setters, operators, and tenders.....	Summary	51-9194	YES	Etchers and engravers.....	Line item
51-7041	YES	Sawing machine setters, operators, and tenders, wood.....	Line item	51-9195	YES	Molders, shapers, and casters, except metal and plastic.....	Line item
51-7042	YES	Woodworking machine setters, operators, operators, and tenders, except sawing.....	Line item	51-9196	YES	Paper goods machine setters, operators, and tenders.....	Line item
51-7099	YES	All other woodworkers.....	Line item	51-9197	YES	Tire builders.....	Line item
51-8000	YES	Plant and system operators.....	Summary				
51-8010	YES	Power plant operators, distributors, and dispatchers.....	Summary				
51-8011	YES	Nuclear power reactor operators.....	Line item				
51-8012	YES	Power distributors and dispatchers.....	Line item				
51-8013	YES	Power plant operators.....	Line item				
51-8021	YES	Stationary engineers and boiler operators.....	Line item				

Table II-1. National employment matrix occupational directory, 2002—Continued

Matrix code	Valid SOC code?	Matrix occupation title	Occupation type	Matrix code	Valid SOC code?	Matrix occupation title	Occupation type
51-9198	YES	Helpers—production workers.....	Line item	53-4041	YES	Subway and streetcar operators.....	Collapse
51-9199	YES	All other production workers.....	Line item	53-4099	YES	Rail transportation workers, all other.....	Collapse
53-0000	YES	Transportation and material moving occupations.....	Summary	53-5000	YES	Water transportation occupations.....	Summary
53-1000	YES	Supervisors, transportation and material moving workers.....	Summary	53-5011	YES	Sailors and marine oilers.....	Line item
53-1011	YES	Aircraft cargo handling supervisors.....	Line item	53-5020	YES	Ship and boat captains and operators.....	Summary
53-1021	YES	First-line supervisors/managers of helpers, laborers, and material movers, hand.....	Line item	53-5021	YES	Captains, mates, and pilots of water vessels.....	Line item
53-1031	YES	First-line supervisors/managers of transportation and material-moving machine and vehicle operators.....	Line item	53-5022	YES	Motorboat operators.....	Line item
53-2000	YES	Air transportation occupations.....	Summary	53-5031	YES	Ship engineers.....	Line item
53-2010	YES	Aircraft pilots and flight engineers.....	Summary	53-5099	NO	All other water transportation workers.....	Line item
53-2011	YES	Airline pilots, copilots, and flight engineers.....	Line item	53-6000	YES	Other transportation workers.....	Summary
53-2012	YES	Commercial pilots.....	Line item	53-6011	YES	Bridge and lock tenders.....	Line item
53-2020	YES	Air traffic controllers and airfield operations specialists.....	Summary	53-6021	YES	Parking lot attendants.....	Line item
53-2021	YES	Air traffic controllers.....	Line item	53-6031	YES	Service station attendants.....	Line item
53-2022	YES	Airfield operations specialists.....	Line item	53-6041	YES	Traffic technicians.....	Line item
53-2099	NO	All other air transportation workers.....	Line item	53-6051	YES	Transportation inspectors.....	Line item
53-3000	YES	Motor vehicle operators.....	Summary	53-6099	YES	All other related transportation workers.....	Line item
53-3011	YES	Ambulance drivers and attendants, except emergency medical technicians.....	Line item	53-7000	YES	Material moving occupations.....	Summary
53-3020	YES	Bus drivers.....	Summary	53-7011	YES	Conveyor operators and tenders.....	Line item
53-3021	YES	Bus drivers, transit and intercity.....	Line item	53-7021	YES	Crane and tower operators.....	Line item
53-3022	YES	Bus drivers, school.....	Line item	53-7030	YES	Dredge, excavating, and loading machine operators.....	Summary
53-3030	YES	Driver/sales workers and truck drivers.....	Summary	53-7031	YES	Dredge operators.....	Line item
53-3031	YES	Driver/sales workers.....	Line item	53-7032	YES	Excavating and loading machine and dragline operators.....	Line item
53-3032	YES	Truck drivers, heavy and tractor-trailer.....	Line item	53-7033	YES	Loading machine operators, underground mining.....	Line item
53-3033	YES	Truck drivers, light or delivery services.....	Line item	53-7041	YES	Hoist and winch operators.....	Line item
53-3041	YES	Taxi drivers and chauffeurs.....	Line item	53-7051	YES	Industrial truck and tractor operators.....	Line item
53-3099	YES	All other motor vehicle operators.....	Line item	53-7060	YES	Laborers and material movers, hand.....	Summary
53-4000	YES	Rail transportation occupations.....	Summary	53-7061	YES	Cleaners of vehicles and equipment.....	Line item
53-4010	YES	Locomotive engineers and operators.....	Rollup	53-7062	YES	Laborers and freight, stock, and material movers, hand.....	Line item
53-4011	YES	Locomotive engineers.....	Collapse	53-7063	YES	Machine feeders and offbearers.....	Line item
53-4012	YES	Locomotive firers.....	Collapse	53-7064	YES	Packers and packagers, hand.....	Line item
53-4013	YES	Rail yard engineers, dinky operators, and hostlers.....	Collapse	53-7070	YES	Pumping station operators.....	Summary
53-4021	YES	Railroad brake, signal, and switch operators.....	Line item	53-7071	YES	Gas compressor and gas pumping station operators.....	Line item
53-4031	YES	Railroad conductors and yardmasters.....	Line item	53-7072	YES	Pump operators, except wellhead pumpers.....	Line item
53-4039	NO	Subway, streetcar operators, and all other rail transportation workers.....	Rollup	53-7073	YES	Wellhead pumpers.....	Line item
				53-7081	YES	Refuse and recyclable material collectors.....	Line item
				53-7111	YES	Shuttle car operators.....	Line item
				53-7121	YES	Tank car, truck, and ship loaders.....	Line item
				53-7199	YES	Material moving workers, all other.....	Line item

Table II-2. National employment matrix industry directory, 2002

Matrix code	Valid NAICS code?	Matrix industry title	Industry type	Matrix code	Valid NAICS code?	Matrix industry title	Industry type
000001	NO	Total employment, all jobs	Summary	311700	YES	Seafood product preparation and packaging	Detail
006700	NO	Total self-employed and unpaid family workers, all jobs	Summary	311800	YES	Bakeries and tortilla manufacturing	Detail
006701	NO	Total self-employed and unpaid family workers, primary job	Summary	311900	YES	Other food manufacturing	Detail
006702	NO	Total self-employed and unpaid family workers, secondary job	Summary	312000	YES	Beverage and tobacco product manufacturing	Summary
000600	NO	Self-employed workers, all jobs	Summary	312100	YES	Beverage manufacturing	Detail
000601	NO	Self-employed workers, primary job	Detail	312200	YES	Tobacco manufacturing	Detail
000602	NO	Self-employed workers, secondary job	Detail	313000	YES	Textile mills	Summary
000700	NO	Unpaid family workers, all jobs	Summary	313100	YES	Fiber, yarn, and thread mills	Detail
000701	NO	Unpaid family workers, primary job	Detail	313200	YES	Fabric mills	Detail
000702	NO	Unpaid family workers, secondary job	Detail	313300	YES	Textile and fabric finishing and fabric coating mills	Detail
000510	NO	Wage and salary workers, second job in agricultural production, forestry, fishing, and private households	Detail	314000	YES	Textile product mills	Summary
000520	NO	Wage and salary workers, all in dustries except second job in agricultural production, forestry, fishing, and private households	Summary	314100	YES	Textile furnishings mills	Detail
110000	YES	Agriculture, forestry, fishing and hunting ¹	Summary	314900	YES	Other textile product mills	Detail
111000	YES	Crop production ¹	Detail	315000	YES	Apparel manufacturing	Summary
112000	YES	Animal production ¹	Detail	315100	YES	Apparel knitting mills	Detail
113000	YES	Forestry and logging	Summary	315200	YES	Cut and sew apparel manufacturing	Detail
113132	NO	Forestry ¹	Detail	315900	YES	Apparel accessories and other apparel manufacturing	Detail
113300	YES	Logging	Detail	316000	YES	Leather and allied product manufacturing	Summary
114000	YES	Fishing, hunting, and trapping ¹	Detail	316200	YES	Footwear manufacturing	Detail
115000	YES	Support activities for agriculture and forestry ¹	Detail	321000	YES	Wood product manufacturing	Summary
210000	YES	Mining	Summary	321100	YES	Sawmills and wood preservation	Detail
211000	YES	Oil and gas extraction	Summary	321200	YES	Veneer, plywood, and engineered wood product manufacturing	Detail
211100	YES	Oil and gas extraction	Detail	321900	YES	Other wood product manufacturing	Detail
212000	YES	Mining (except oil and gas)	Summary	322000	YES	Paper manufacturing	Summary
212100	YES	Coal mining	Detail	322100	YES	Pulp, paper, and paperboard mills	Detail
212200	YES	Metal ore mining	Detail	322200	YES	Converted paper product manufacturing	Detail
212300	YES	Nonmetallic mineral mining and quarrying	Detail	323000	YES	Printing and related support activities	Summary
213000	YES	Support activities for mining	Summary	323100	YES	Printing and related support activities	Detail
213100	YES	Support activities for mining	Detail	324000	YES	Petroleum and coal products manufacturing	Summary
230000	YES	Construction	Summary	324100	YES	Petroleum and coal products manufacturing	Detail
236000	YES	Construction of buildings	Summary	325000	YES	Chemical manufacturing	Summary
236100	YES	Residential building construction	Detail	325100	YES	Basic chemical manufacturing	Detail
236200	YES	Nonresidential building construction	Detail	325200	YES	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	Detail
237000	YES	Heavy and civil engineering construction	Summary	325300	YES	Pesticide, fertilizer, and other agricultural chemical manufacturing	Detail
237100	YES	Utility system construction	Detail	325400	YES	Pharmaceutical and medicine manufacturing	Detail
237200	YES	Land subdivision	Detail	325500	YES	Paint, coating, and adhesive manufacturing	Detail
237300	YES	Highway, street, and bridge construction	Detail	325600	YES	Soap, cleaning compound, and toilet preparation manufacturing	Detail
237900	YES	Other heavy and civil engineering construction	Detail	325900	YES	Other chemical product and preparation manufacturing	Detail
238000	YES	Specialty trade contractors	Summary	326000	YES	Plastics and rubber products manufacturing	Summary
238100	YES	Foundation, structure, and building exterior contractors	Detail	326100	YES	Plastics product manufacturing	Detail
238200	YES	Building equipment contractors	Detail	326200	YES	Rubber product manufacturing	Detail
238300	YES	Building finishing contractors	Detail	327000	YES	Nonmetallic mineral product manufacturing	Summary
238900	YES	Other specialty trade contractors	Detail	327100	YES	Clay product and refractory manufacturing	Detail
31-330	NO	Manufacturing	Summary	327200	YES	Glass and glass product manufacturing	Detail
311000	YES	Food manufacturing	Summary	327300	YES	Cement and concrete product manufacturing	Detail
311100	YES	Animal food manufacturing	Detail	331000	YES	Primary metal manufacturing	Summary
311200	YES	Grain and oilseed milling	Detail				
311300	YES	Sugar and confectionery product manufacturing	Detail				
311400	YES	Fruit and vegetable preserving and specialty food manufacturing	Detail				
311500	YES	Dairy product manufacturing	Detail				
311600	YES	Animal slaughtering and processing	Detail				

Table II-2. National employment matrix industry directory, 2002—Continued

Matrix code	Valid NAICS code?	Matrix industry title	Industry type	Matrix code	Valid NAICS code?	Matrix industry title	Industry type
331100	YES	Iron and steel mills and ferroalloy manufacturing	Detail	336400	YES	Aerospace product and parts manufacturing	Detail
331200	YES	Steel product manufacturing from purchased steel	Detail	336500	YES	Railroad rolling stock manufacturing	Detail
331300	YES	Alumina and aluminum production and processing	Detail	336600	YES	Ship and boat building	Detail
331400	YES	Nonferrous metal (except aluminum) production and processing	Detail	336900	YES	Other transportation equipment manufacturing	Detail
331500	YES	Foundries	Detail	337000	YES	Furniture and related product manufacturing	Summary
332000	YES	Fabricated metal product manufacturing	Summary	337100	YES	Household and institutional furniture and kitchen cabinet manufacturing	Detail
332100	YES	Forging and stamping	Detail	337200	YES	Office furniture (including fixtures) manufacturing	Detail
332200	YES	Cutlery and handtool manufacturing	Detail	337900	YES	Other furniture related product manufacturing	Detail
332300	YES	Architectural and structural metals manufacturing	Detail	339000	YES	Miscellaneous manufacturing	Summary
332400	YES	Boiler, tank, and shipping container manufacturing	Detail	339100	YES	Medical equipment and supplies manufacturing	Detail
332500	YES	Hardware manufacturing	Detail	339900	YES	Other miscellaneous manufacturing	Detail
332600	YES	Spring and wire product manufacturing	Detail	420000	YES	Wholesale trade	Summary
332700	YES	Machine shops; turned product; and screw, nut, and bolt manufacturing	Detail	423000	YES	Merchant wholesalers, durable goods	Summary
332800	YES	Coating, engraving, heat treating, and allied activities	Detail	423100	YES	Motor vehicle and motor vehicle parts and supplies merchant wholesalers	Detail
332900	YES	Other fabricated metal product manufacturing	Detail	423200	YES	Furniture and home furnishing merchant wholesalers	Detail
333000	YES	Machinery manufacturing	Summary	423300	YES	Lumber and other construction materials merchant wholesalers	Detail
333100	YES	Agriculture, construction, and mining machinery manufacturing	Detail	423400	YES	Professional and commercial equipment and supplies merchant wholesalers	Detail
333200	YES	Industrial machinery manufacturing	Detail	423500	YES	Metal and mineral (except petroleum) merchant wholesalers	Detail
333300	YES	Commercial and service industry machinery manufacturing	Detail	423600	YES	Electrical and electronic goods merchant wholesalers	Detail
333400	YES	Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	Detail	423700	YES	Hardware, and plumbing and heating equipment and supplies merchant wholesalers	Detail
333500	YES	Metaworking machinery manufacturing	Detail	423800	YES	Machinery, equipment, and supplies merchant wholesalers	Detail
333600	YES	Engine, turbine, and power transmission equipment manufacturing	Detail	423900	YES	Miscellaneous durable goods merchant wholesalers	Detail
333900	YES	Other general purpose machinery manufacturing	Detail	424000	YES	Merchant wholesalers, nondurable goods	Summary
334000	YES	Computer and electronic product manufacturing	Summary	424100	YES	Paper and paper product merchant wholesalers	Detail
334100	YES	Computer and peripheral equipment manufacturing	Detail	424200	YES	Drugs and druggists' sundries merchant wholesalers	Detail
334200	YES	Communications equipment manufacturing	Detail	424300	YES	Apparel, piece goods, and notions merchant wholesalers	Detail
334300	YES	Audio and video equipment manufacturing	Detail	424400	YES	Grocery and related product wholesalers	Detail
334400	YES	Semiconductor and other electronic component manufacturing	Detail	424500	YES	Farm product raw material merchant wholesalers	Detail
334500	YES	Navigational, measuring, electromedical, and control instruments manufacturing	Detail	424600	YES	Chemical and allied products merchant wholesalers	Detail
334600	YES	Manufacturing and reproducing magnetic and optical media	Detail	424700	YES	Petroleum and petroleum products merchant wholesalers	Detail
335000	YES	Electrical equipment, appliance, and component manufacturing	Summary	424800	YES	Beer, wine, and distilled alcoholic beverage merchant wholesalers	Detail
335100	YES	Electric lighting equipment manufacturing	Detail	424900	YES	Miscellaneous nondurable goods merchant wholesalers	Detail
335200	YES	Household appliance manufacturing	Detail	425000	YES	Wholesale electronic markets and agents and brokers	Summary
335300	YES	Electrical equipment manufacturing	Detail	425100	YES	Wholesale electronic markets and agents and brokers	Detail
335900	YES	Other electrical equipment and component manufacturing	Detail	44-450	NO	Retail trade	Summary
336000	YES	Transportation equipment manufacturing	Summary	441000	YES	Motor vehicle and parts dealers	Summary
336100	YES	Motor vehicle manufacturing	Detail	441100	YES	Automobile dealers	Detail
336200	YES	Motor vehicle body and trailer manufacturing	Detail	441200	YES	Other motor vehicle dealers	Detail
336300	YES	Motor vehicle parts manufacturing	Detail				

Table II-2. National employment matrix industry directory, 2002—Continued

Matrix code	Valid NAICS code?	Matrix industry title	Industry type	Matrix code	Valid NAICS code?	Matrix industry title	Industry type
441300	YES	Automotive parts, accessories, and tire stores	Detail	488000	YES	Support activities for transportation	Summary
442000	YES	Furniture and home furnishings stores	Summary	488100	YES	Support activities for air transportation	Detail
442100	YES	Furniture stores	Detail	488300	YES	Support activities for water transportation	Detail
442200	YES	Home furnishings stores	Detail	488400	YES	Support activities for road transportation	Detail
443000	YES	Electronics and appliance stores	Summary	488500	YES	Freight transportation arrangement	Detail
443100	YES	Electronics and appliance stores	Detail	492000	YES	Couriers and messengers	Summary
444000	YES	Building material and garden equipment and supplies dealers	Summary	492100	YES	Couriers	Detail
444100	YES	Building material and supplies dealers	Detail	492200	YES	Local messengers and local delivery	Detail
444200	YES	Lawn and garden equipment and supplies stores	Detail	493000	YES	Warehousing and storage	Summary
445000	YES	Food and beverage stores	Summary	493100	YES	Warehousing and storage	Detail
445100	YES	Grocery stores	Detail	220000	YES	Utilities	Summary
445200	YES	Specialty food stores	Detail	221000	YES	Utilities	Summary
445300	YES	Beer, wine, and liquor stores	Detail	221100	YES	Electric power generation, transmission, and distribution	Detail
446000	YES	Health and personal care stores	Summary	221200	YES	Natural gas distribution	Detail
446100	YES	Health and personal care stores	Detail	221300	YES	Water, sewage, and other systems	Detail
447000	YES	Gasoline stations	Summary	510000	YES	Information	Summary
447100	YES	Gasoline stations	Detail	511000	YES	Publishing industries (except Internet)	Summary
448000	YES	Clothing and clothing accessories stores	Summary	511100	YES	Newspaper, periodical, book, and directory publishers	Detail
448100	YES	Clothing stores	Detail	511200	YES	Software publishers	Detail
448200	YES	Shoe stores	Detail	512000	YES	Motion picture and sound recording industries	Summary
448300	YES	Jewelry, luggage, and leather goods stores	Detail	511	YES	Motion picture and video industries	Detail
451000	YES	Sporting goods, hobby, book, and music stores	Summary	512	YES	Sound recording industries	Detail
451100	YES	Sporting goods, hobby, and musical instrument stores	Detail	513	YES	Broadcasting (except Internet)	Summary
451200	YES	Book, periodical, and music stores	Detail	514	YES	Radio and television broadcasting	Detail
452000	YES	General merchandise stores	Summary	515200	YES	Cable and other subscription programming	Detail
452100	YES	Department stores	Detail	516000	YES	Internet publishing and broadcasting	Summary
452900	YES	Other general merchandise stores	Detail	516100	YES	Internet publishing and broadcasting	Detail
453000	YES	Miscellaneous store retailers	Summary	517000	YES	Telecommunications	Summary
453100	YES	Florists	Detail	517100	YES	Wired telecommunications carriers	Detail
453200	YES	Office supplies, stationery, and gift stores	Detail	517200	YES	Wireless telecommunications carriers (except satellite)	Detail
453300	YES	Used merchandise stores	Detail	517300	YES	Telecommunications resellers	Detail
453900	YES	Other miscellaneous store retailers	Detail	517500	YES	Cable and other program distribution	Detail
454000	YES	Nonstore retailers	Summary	518000	YES	Internet service providers, web search portals, and data processing services ..	Summary
454100	YES	Electronic shopping and mail-order houses	Detail	518100	YES	Internet service providers and web search portals	Detail
454200	YES	Vending machine operators	Detail	518200	YES	Data processing, hosting, and related services	Detail
454300	YES	Direct selling establishments	Detail	519000	YES	Other information services	Summary
48-490	NO	Transportation and warehousing	Summary	519100	YES	Other information services	Detail
481000	YES	Air transportation	Summary	520000	YES	Finance and insurance	Summary
481100	YES	Scheduled air transportation	Detail	521000	YES	Monetary authorities—central bank	Summary
481200	YES	Nonscheduled air transportation	Detail	521100	YES	Monetary authorities—central bank	Detail
482000	YES	Rail transportation	Summary	522000	YES	Credit intermediation and related activities	Summary
482100	YES	Rail transportation	Detail	522100	YES	Depository credit intermediation	Detail
483000	YES	Water transportation	Summary	522200	YES	Nondepository credit intermediation	Detail
483100	YES	Deep sea, coastal, and great lakes water transportation	Detail	522300	YES	Activities related to credit intermediation	Detail
483200	YES	Inland water transportation	Detail	523000	YES	Securities, commodity contracts, and other financial investments and related activities	Summary
484000	YES	Truck transportation	Summary	523900	YES	Other financial investment activities	Detail
484100	YES	General freight trucking	Detail	524000	YES	Insurance carriers and related activities	Summary
484200	YES	Specialized freight trucking	Detail	524100	YES	Insurance carriers	Detail
485000	YES	Transit and ground passenger transportation	Summary	524200	YES	Agencies, brokerages, and other insurance related activities	Detail
485100	YES	Urban transit systems	Detail	525000	YES	Funds, trusts, and other financial vehicles	Summary
485200	YES	Interurban and rural bus transportation	Detail	525100	YES	Insurance and employee benefit funds	Detail
485300	YES	Taxi and limousine service	Detail				
485400	YES	School and employee bus transportation ..	Detail				
485500	YES	Charter bus industry	Detail				
485900	YES	Other transit and ground passenger transportation	Detail				
486000	YES	Pipeline transportation	Detail				
487000	YES	Scenic and sightseeing transportation	Detail				

Table II-2. National employment matrix industry directory, 2002—Continued

Matrix code	Valid NAICS code?	Matrix industry title	Industry type	Matrix code	Valid NAICS code?	Matrix industry title	Industry type
525900	YES	Other investment pools and funds.....	Detail	621200	YES	Offices of dentists.....	Detail
530000	YES	Real estate and rental and leasing.....	Summary	621300	YES	Offices of other health practitioners.....	Detail
531000	YES	Real estate.....	Summary	621400	YES	Outpatient care centers.....	Detail
531100	YES	Lessors of real estate.....	Detail	621500	YES	Medical and diagnostic laboratories.....	Detail
531200	YES	Offices of real estate agents and brokers.....	Detail	621600	YES	Home health care services.....	Detail
531300	YES	Activities related to real estate.....	Detail	621900	YES	Other ambulatory health care services.....	Detail
532000	YES	Rental and leasing services.....	Summary	622000	YES	Hospitals, private.....	Detail
532100	YES	Automotive equipment rental and leasing.....	Detail	623000	YES	Nursing and residential care facilities.....	Summary
532200	YES	Consumer goods rental.....	Detail	623100	YES	Nursing care facilities.....	Detail
532300	YES	General rental centers.....	Detail	623200	YES	Residential mental retardation, mental health and substance abuse facilities...	Detail
532400	YES	Commercial and industrial machinery and equipment rental and leasing.....	Detail	623300	YES	Community care facilities for the elderly.....	Detail
533000	YES	Lessors of nonfinancial intangible assets (except copyrighted works).....	Summary	623900	YES	Other residential care facilities.....	Detail
533100	YES	Lessors of nonfinancial intangible assets (except copyrighted works).....	Detail	624000	YES	Social assistance.....	Summary
540000	YES	Professional, scientific, and technical services.....	Summary	624100	YES	Individual and family services.....	Detail
541000	YES	Professional, scientific, and technical services.....	Summary	624200	YES	Community food and housing, and emergency and other relief services.....	Detail
541100	YES	Legal services.....	Detail	624300	YES	Vocational rehabilitation services.....	Detail
541200	YES	Accounting, tax preparation, bookkeeping, and payroll services.....	Detail	624400	YES	Child day care services.....	Detail
541300	YES	Architectural, engineering, and related services.....	Detail	710000	YES	Arts, entertainment, and recreation.....	Summary
541400	YES	Specialized design services.....	Detail	711000	YES	Performing arts, spectator sports, and related industries.....	Summary
541500	YES	Computer systems design and related services.....	Detail	711100	YES	Performing arts companies.....	Detail
541600	YES	Management, scientific, and technical consulting services.....	Detail	711200	YES	Spectator sports.....	Detail
541700	YES	Scientific research and development services.....	Detail	711500	YES	Independent artists, writers, and performers.....	Detail
541800	YES	Advertising and related services.....	Detail	712000	YES	Museums, historical sites, and similar institutions.....	Summary
541900	YES	Other professional, scientific, and technical services.....	Detail	712100	YES	Museums, historical sites, and similar institutions.....	Detail
550000	YES	Management of companies and enterprises.....	Summary	713000	YES	Amusement, gambling, and recreation industries.....	Summary
551000	YES	Management of companies and enterprises.....	Summary	713100	YES	Amusement parks and arcades.....	Detail
551100	YES	Management of companies and enterprises.....	Detail	713200	YES	Gambling industries.....	Detail
560000	YES	Administrative and support and waste management and remediation services.....	Summary	713900	YES	Other amusement and recreation industries.....	Detail
561000	YES	Administrative and support services.....	Summary	720000	YES	Accommodation and food services.....	Summary
561100	YES	Office administrative services.....	Detail	721000	YES	Accommodation.....	Summary
561200	YES	Facilities support services.....	Detail	721200	YES	RV (recreational vehicle) parks and recreational camps.....	Detail
561300	YES	Employment services.....	Detail	722000	YES	Food services and drinking places.....	Summary
561400	YES	Business support services.....	Detail	722100	YES	Full-service restaurants.....	Detail
561500	YES	Travel arrangement and reservation services.....	Detail	722200	YES	Limited-service eating places.....	Detail
561600	YES	Investigation and security services.....	Detail	722300	YES	Special food services.....	Detail
561700	YES	Services to buildings and dwellings.....	Detail	722400	YES	Drinking places (alcoholic beverages).....	Detail
561900	YES	Other support services.....	Detail	810000	YES	Other services (except government).....	Summary
562000	YES	Waste management and remediation services.....	Summary	811000	YES	Repair and maintenance.....	Summary
562100	YES	Waste collection.....	Detail	811100	YES	Automotive repair and maintenance.....	Detail
562200	YES	Waste treatment and disposal.....	Detail	811200	YES	Electronic and precision equipment repair and maintenance.....	Detail
562900	YES	Remediation and other waste management services.....	Detail	811300	YES	Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance.....	Detail
610000	YES	Educational services, private.....	Summary	811400	YES	Personal and household goods repair and maintenance.....	Detail
611000	YES	Educational services, private.....	Detail	812000	YES	Personal and laundry services.....	Summary
620000	YES	Health care and social assistance.....	Summary	812100	YES	Personal care services.....	Detail
621000	YES	Ambulatory health care services.....	Summary	812200	YES	Death care services.....	Detail
621100	YES	Offices of physicians.....	Detail	812300	YES	Drycleaning and laundry services.....	Detail
				812900	YES	Other personal services.....	Detail
				813000	YES	Religious, grantmaking, civic, professional, and similar organizations.....	Summary
				813100	YES	Religious organizations.....	Detail
				813200	YES	Grantmaking and giving services.....	Detail
				813300	YES	Social advocacy organizations.....	Detail
				813400	YES	Civic and social organizations.....	Detail
				813900	YES	Business, professional, labor, political, and similar organizations.....	Detail

Table II-2. National employment matrix industry directory, 2002—Continued

Matrix code	Valid NAICS code?	Matrix industry title	Industry type	Matrix code	Valid NAICS code?	Matrix industry title	Industry type
814000	YES	Private households ¹	Summary	926110	NO	State government educational services	Detail
814100	YES	Private households ¹	Detail	926220	NO	State government hospitals.....	Detail
990000	NO	Government	Summary	929200	NO	State government, excluding education and hospitals.....	Detail
910000	NO	Federal Government	Summary	930000	NO	Local government.....	Summary
491100	YES	Postal Service	Detail	936110	NO	Local government educational services	Detail
919999	NO	Federal Government, excluding Postal Service.....	Detail	936220	NO	Local government hospitals	Detail
920000	NO	State government.....	Summary	939300	NO	Local government, excluding education and hospitals.....	Detail

¹ Except secondary jobs in agricultural production, forestry, fishing, or private households.

Chapter III. Selected Occupational Data, 2002 and Projected 2012

Every other year, the Bureau of Labor Statistics updates data on current and projected employment, annual average job openings, and other characteristics for all national employment matrix occupations. These data are distributed in a variety of formats and publications, ranging from the detailed discussion and tables in the *Monthly Labor Review* (February 2004) to the brief textual and graphic presentations in the *Occupational Outlook Quarterly* (winter edition, 2003-04). In addition, the searchable National Employment Matrix and Occupational Employment, Training, and Earnings Internet sites display the data, which also underlie the job outlook and other information published in the *Occupational Outlook Handbook*.

Table III-1 displays data on 2002 and projected 2012 employment, employment change, self-employment, annual average job openings, and other characteristics for all national employment matrix occupations. Newly developed information on educational attainment discussed in Chapter I accompany the projections data for the first time. Quartile rankings designate the relative magnitude of data for each detailed occupation. As a result, readers using table III-1 can obtain specific data about several variables for any occupation and can use the rankings to determine how information for a specific occupation compares with that for other occupations.

In some cases, 2002 OES survey employment data for two or more occupations were combined into a single national employment matrix occupation because of confidentiality or reliability concerns. In other cases, reliable 2002 employment data were available, but research required to prepare a projection could not be completed. Base-year employment for these occupations, termed "collapsed" occupations, was combined to create occupations unique to the national employment matrix—"rollup" occupations. (See table III-2.)

Employment was projected for the rollup occupations, not for their components. Because employment for collapsed occupations was not projected, these occupations do not appear in table III-1. Information about the number currently employed in an occupation, however, is valuable because it provides a measure of the occupation's significance in the labor market. Accordingly, table III-2 displays 2002 employment for collapsed occupations, supplementing the information from table III-1.

Data presented

Information about each variable's data source and potential use is presented in this chapter. The Occupational Employment Statistics (OES) survey and the Current Population Survey (CPS) provide almost all of the employment data

used in developing the 2002-12 projections. (See Chapter II for more details on the structure of the 2002-12 national employment matrix.) These surveys also are the sources of other statistical information contained in table III-1.

Occupational data from the OES survey are not entirely comparable with those from the CPS, because of differences in occupational classification systems and in concepts and methods used in the two surveys.¹ Information about worker characteristics from the CPS is applied to matrix occupations on the basis of the relationship between the 2000 Census of Population occupational classification system and the 2000 Standard Occupational Classification system used by the OES survey.² Comparisons based on CPS occupations with fewer than 50,000 workers in 2002 and on some other occupations for which the data appeared unreliable were excluded; data for CPS proxy occupations were substituted. Where possible, larger, closely related CPS occupations were chosen as proxies for the excluded occupations. When a detailed occupation could not be identified, a summary occupational group was used.

Rankings for data categories identify the relative magnitude of variables in terms of the distribution of employment. For example, to rank the projected percent change in employment, data on 2002 employment and projected 2002-12 percent change in employment were assembled for each occupation, after which each occupation's employment as a percent of 2002 total employment was calculated. The occupations were sorted by employment change in descending order, and the cumulative percentage of 2002 employment for each was determined. Occupations within the group accounting for less than 25 percent of total employment are designated "VH," for a very high growth rate. Similarly, occupations sorted by descending order of employment change and accounting for 25 to 50 percent of

¹ Of the 725 matrix occupations for which projections were developed, 370 had a one-to-one correspondence with a CPS occupation. Combinations of an additional 343 matrix occupations each obtained employment from a single, higher level CPS occupation. In these cases, the characteristics of the higher level CPS occupation were applied to each matrix occupation. The final 12 matrix occupations received data from more than one CPS occupation with the CPS occupation's employment contribution to the matrix occupation used to weight its impact.

² CPS occupational data for 2000 through 2002 were coded using the 1990 Census of Population occupation classification system. BLS had the Bureau of the Census recode 2000, 2001, and 2002 monthly CPS occupational data to the 2000 Census of Population occupational classification system, which is quite comparable to the 2000 Standard Occupational Classification system. BLS used these recoded data in preparing the 2002 national employment matrix. Replacement rates, which were calculated using CPS data based on the 1990 Census of Population occupation classification system, were distributed to the 2000 Census of Population system using information from the recoded CPS files.

employment are labeled "H" (high): 50 to 75 percent, "L" (low); and 75 to 100 percent, "VL" (very low). Occupations were sorted by other data elements, and rankings were determined in the same manner.

Employment, 2002 and 2012. (Source: Bureau of Labor Statistics, national employment matrices for 2002 and 2012.) Employment information is a useful starting point for assessing opportunities, because large occupations usually have more openings than do small ones, regardless of growth or replacement rates. The data include jobs in all industries. Wage and salary, self-employed, and unpaid family workers are included.

Employment change, 2002–12, numeric. (Source: Bureau of Labor Statistics, national employment matrices for 2002 and 2012.) Information on numerical change provides an absolute measure of projected job gains or losses.

Employment change, 2002–12, percent. (Source: Bureau of Labor Statistics, national employment matrices for 2002 and 2012.) The percent change in employment measures the rate of change of an occupation. A rapidly growing occupation usually indicates favorable prospects for employment. Moreover, the high demand for workers in a rapidly growing occupation improves their chances for advancement and mobility. Modest employment growth in a large occupation can result in many more job openings than does rapid employment growth in a small occupation.

Percent self-employed, 2002. (Source: Bureau of Labor Statistics, national employment matrix for 2002.) Individuals who are interested in creating and managing their own businesses may find it important to know the percentage of self-employed workers in an occupation. This percentage is calculated from CPS data on unincorporated self-employed persons in their primary or secondary job who are included in matrix employment data. The unincorporated self-employed work for earnings or fees in their own business and, unlike self-employed persons in businesses that are incorporated, do not receive a wage or salary.

Job openings due to growth and total replacement needs, 2002–12. (Source: Bureau of Labor Statistics, this publication.) These data provide the broadest measure of job opportunities and identify the total number of additional employees needed annually in an occupation. The number of openings due to growth is calculated from data on increases in occupational employment taken from national employment matrices for 2002–12. If employment declines, job openings due to growth are zero. Estimates of total replacement needs encompass the replacement of workers at all experience levels who leave their jobs to work in another occupation, who stop working because of retirement or other reasons, or who die. Total replacement needs reflect the normal movements in the labor force, are calculated from 2001–02 CPS data, and are described in

Chapter V. Data from CPS proxy occupations are used to estimate replacement needs for some matrix occupations.

Job openings due to growth and to net replacement needs, 2002–12. (Source: Bureau of Labor Statistics, this publication.) These data indicate the number of new workers needed annually in an occupation and, if training is required, measure minimum training needs. The number of openings due to growth is calculated from data on increases in occupational employment from national employment matrices for 2002–12. If employment declines, job openings due to growth are zero. Net replacement job openings typically are due to experienced workers leaving the occupation or the labor force. Net replacement needs are calculated from monthly CPS data and are described in Chapter V. Data from CPS proxy occupations are used to estimate replacement needs for some matrix occupations.

Median annual earnings, 2002. (Source: 2002 OES survey for most occupations. Estimates developed from 2002 CPS data provide information for occupations not covered by the OES survey, such as farmers and ranchers and cooks, private household.) Table III-1 presents median annual earnings of workers in different occupations.

Unemployment rate. (Source: Average of 2000–2002 CPS monthly data.³) Some occupations are more susceptible to factors that result in unemployment, including seasonality, fluctuations in economic conditions, and individual business failures. A high unemployment rate indicates that individuals in a given occupation are more likely to become unemployed than are those in occupations with a low rate. Data from CPS proxy occupations are used to estimate unemployment rates for some matrix occupations.

Percent part time. (Source: Average of 2000–2002 CPS monthly data.⁴) Persons who prefer part-time work may want to know the proportion of employees in an occupation who work fewer than 35 hours per week. Data from CPS proxy occupations are used to estimate the proportion of part-time workers for some matrix occupations.

Most significant source of postsecondary education or training. (Source: Bureau of Labor Statistics.) BLS uses 11 categories to describe all types of postsecondary education or training. Occupation analysts assign a single category that best describes the education or training needed by most workers to become fully qualified. While individuals with different levels of education or training can enter most occupations, a single category is needed to facilitate analyses of current employment, employment growth, earnings, or other characteristics.

The categories can be used as an initial reference for assessing what postsecondary education or training may be

³ Ibid.

⁴ Ibid.

preferable. Because qualification generally can be accomplished in several ways, however, the categories should not be viewed as an absolute standard. Reviewing the material on "Training, other qualifications, and advancement" in the *Occupational Outlook Handbook* can help determine whether alternatives exist. In most occupations, alternatives do exist. For example, a significant number of computer systems analysts have acquired the qualifying skills, but do not have a bachelor's degree—the postsecondary education category designated for the occupation. Insights such as this are available from the *Handbook*.

On the basis of an analysis of the occupation's most significant source of postsecondary education or training, occupations are classified into 1 of 11 categories listed below, according to these principles:

- An occupation is placed into the category that best describes the education or training that most workers need to become fully qualified.
- Postsecondary awards, if generally needed for entry into the occupation, take precedence over work-related training, even though additional skills or experience may be needed for a worker to become fully qualified.
- The length of time that an average worker generally needs to become fully qualified through a combination of on-the-job training and experience is used to categorize occupations in which a postsecondary award generally is not needed for entry.

Postsecondary awards

First professional degree. Completion of the degree usually requires at least 3 years of full-time academic study beyond a bachelor's degree. The first professional degree is the minimum preparation required for entry into several professions, including law, medicine, and dentistry.

Doctoral degree. Completion of a Ph.D. or other doctoral degree usually requires at least 3 years of full-time academic work beyond the bachelor's degree.

Master's degree. Completion of the degree usually requires 1 or 2 years of full-time academic study beyond a bachelor's degree.

Bachelor's or higher degree, plus work experience. Most occupations in this category are management occupations. All require experience in a related nonmanagement position for which a bachelor's or higher degree is usually required. Jobs usually are filled with experienced staff who are promoted into a management position, such as engineers who advance to engineering manager.

Bachelor's degree. Completion of the degree generally requires at least 4 years, but not more than 5 years, of full-time academic study beyond high school.

Associate degree. Completion of the degree usually re-

quires at least 2 years of full-time academic study beyond high school.

Postsecondary vocational awards. Programs lead to a certificate or other award, but not a degree. Some programs last only a few weeks, while others may last more than a year. Occupations in this category include some that require only the completion of a training program and some that require individuals to pass a licensing exam after completion of the program before they can work.

Work-related training

Work experience in a related occupation. Many occupations requiring work experience are first-line supervisors/managers of service, sales and related, production, or other occupations, or are other types of managers.

Long-term on-the-job training. More than 12 months of on-the-job training or combined work experience and formal classroom instruction are needed for workers to develop the skills to become fully qualified. This category includes formal or informal apprenticeships that may last up to 5 years. Long-term on-the-job training also includes intensive occupation-specific, employer-sponsored programs that workers must successfully complete. These programs include fire and police academies and schools for air traffic controllers and flight attendants. In other occupations—insurance sales and securities sales, for example—trainees take formal courses, often provided at the jobsite, to prepare for the required licensing exams. Individuals undergoing training usually are considered to be employed in the occupation. Also included in this category is the development of natural ability—such as that possessed by musicians, athletes, actors, and other entertainers—that must be cultivated over several years, frequently in a non-work setting.

Moderate-term on-the-job training. Skills needed for a worker to become fully qualified can be acquired during 1 to 12 months of combined on-the-job experience and informal training.

Short-term on-the-job training. Skills needed for a worker to become fully qualified can be acquired during a short demonstration of job duties or during 1 month or less of on-the-job experience or instruction.

Once again, the categories identify the postsecondary education or training used by most individuals in an occupation to become fully qualified. The categories cannot and do not describe all paths and are not intended to indicate the level of educational attainment required for a person to be hired.

Educational attainment cluster. (Source: Bureau of Labor Statistics, this publication.) Six clusters are defined based on the distribution of educational attainment across

occupations, as described in Chapter I of this publication. The clusters are as follows: HS = High school occupations, HS/SC = High school/Some college occupations, HS/SC/C = High school/Some college/College occupations, SC/C = Some college/College occupations, and C = College occupations.

Percent of workers aged 25 to 44, by educational attainment. (Source: 2000–02 CPS monthly data.⁵) Many occupations have multiple sources of education and training and are difficult to assign to a single category. To provide insight into alternative routes to obtaining entry into an occupation, data drawn from the CPS are presented on the percentage of employees in each occupation who are aged 25–44 years and who have a high school degree or less, some college (including, but not limited to, recipients of associate degrees), or at least a bachelor's degree. Individuals in surveyed households self-report their occupation and highest educational attainment. For a full description of this new analytical product, see Chapter I of this publication.

Using ranked information

Table III–1 consolidates 2002 and 2012 projected employment data and provides comparisons of occupational data. The table ranks information about current and projected employment, projected job openings, earnings, unemployment rates, and the proportion of part-time workers. Except for the unemployment and part-time categories, a high ranking indicates a favorable assessment. A high ranking for the unemployment rate is considered undesirable. Unemployment rates in construction occupations, however, are inflated by characteristics of the industry that make comparisons misleading. For example, construction workers typically experience periods of unemployment after completing a project and before starting work on a new project.

The ranking for the part-time category also should not be used routinely in assessing the desirability of employment, because such an assessment depends on the perspective of the user. For example, high school students might consider a large proportion of part-time work desirable, given that they normally prefer not to work full time. A re-

cent college graduate or anyone seeking full-time employment, however, might reach the opposite conclusion.

The data in table III–1 have many potential uses. At times, users may want to know how a particular occupation—41-2011, “cashiers, except gaming”, for example—compares with others. The “VH” (very high) rankings in the table for the increase in the number of jobs and for both categories of job openings point out that many jobs are available, certainly a favorable rating. The “VL” (very low) ranking for earnings and the “VH” (very high) ranking for unemployment, however, are unfavorable in comparison with rankings for other occupations, and these characteristics detract from the desirability of employment in the occupation. The table also shows that cashiers, except gaming, require only short-term on-the-job training.

Some readers might wish to identify occupations with favorable characteristics that jobseekers can pursue through a specific type of training. For example, a student might be interested in a technical occupation, but might not care to obtain a 4-year college degree. In another instance, a planner might wish to ensure that training programs provided by junior colleges in the area are consistent with the needs of the national labor market. To obtain appropriate information, both the student and the planner could examine information on occupations for which the associate degree is the most significant source of education or training.

Although table III–1 contains a great deal of information that is useful for career guidance, information about occupational comparisons should be used as an aid, not as a sole source of information for making career choices. After using the table to identify occupations with favorable prospects, the reader should obtain additional information from other sources, such as the *Occupational Outlook Handbook*, the *Occupational Outlook Quarterly*, and local sources, if available. Consideration should be given to individual aptitudes and preferences, and alternative sources of training available in the local area should be investigated. The appendix identifies sources of State and local area information.

An electronic version of table III–1 is available on the Internet at:

<ftp://ftp.bls.gov/pub/special.requests/ep/optddata/>

⁵ Ibid.

Employment Projections on the Internet

The "Employment Projections" homepage on the BLS Internet site (<http://www.bls.gov/emp>) provides access to electronic copies of:

- ◆ *the 2004–05 Occupational Projections and Training Data*, this publication;
- ◆ *the 2004–05 Occupational Outlook Handbook*;
- ◆ *the 2004–05 Career Guide to Industries*;
- ◆ "Charting the projections," the Winter 2003–04 issue of the *Occupational Outlook Quarterly*;
- ◆ "Employment Outlook 2002–12" articles from the February 2004 *Monthly Labor Review* describing the 2002–12 projections in detail;
- ◆ two online searchable databases;
- ◆ frequently requested tables; and
- ◆ many other items of interest to users of industry and occupation employment projections.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
00-0000	Total, all occupations	144,014	165,319	21,305	-	14.8	-	8.0	26,812	-
11-1300	Management, business, and financial occupations	15,501	17,883	2,382	-	15.4	-	19.1	2,095	-
11-0000	Management occupations	10,056	11,277	1,221	-	12.1	-	25.0	1,288	-
11-1000	Top executives	2,669	3,138	469	-	17.6	-	3.6	352	-
11-1011	Chief executives	553	645	93	H	16.8	H	14.6	67	L
11-1021	General and operations managers	2,049	2,425	376	VH	18.4	H	.7	280	VH
11-1031	Legislators	67	68	1	VL	1.1	VL	.0	4	VL
11-2000	Advertising, marketing, promotions, public relations, and sales managers	700	885	185	-	26.5	-	2.8	120	-
11-2011	Advertising and promotions managers	85	107	21	L	25.0	VH	2.4	15	VL
11-2020	Marketing and sales managers	546	693	148	-	27.1	-	3.1	94	-
11-2021	Marketing managers	203	246	43	L	21.4	H	3.1	33	VL
11-2022	Sales managers	343	448	105	H	30.5	VH	3.0	61	L
11-2031	Public relations managers	69	85	16	VL	23.4	VH	.9	11	VL
11-3000	Operations specialties managers	1,807	2,163	356	-	19.7	-	1.5	229	-
11-3011	Administrative services managers	321	384	63	L	19.8	H	.2	43	L
11-3021	Computer and information systems managers	284	387	103	H	36.1	VH	1.1	45	L
11-3031	Financial managers	599	709	109	H	18.3	H	3.1	77	L
11-3040	Human resources managers	202	242	39	L	19.4	H	.0	23	VL
11-3051	Industrial production managers	182	197	14	VL	7.9	VL	1.5	19	VL
11-3061	Purchasing managers	108	113	5	VL	4.8	VL	.2	9	VL
11-3071	Transportation, storage, and distribution managers	111	133	22	L	19.7	H	1.1	14	VL
11-9000	Other management occupations	4,880	5,090	210	-	4.3	-	48.5	588	-
11-9010	Agricultural managers	1,376	1,149	-227	-	-16.5	-	83.7	132	-
11-9011	Farm, ranch, and other agricultural managers	218	229	11	VL	5.1	VL	.9	26	VL
11-9012	Farmers and ranchers ¹	1,158	920	-238	VL	-20.6	VL	99.3	106	H
11-9021	Construction managers	389	435	47	L	12.0	L	46.9	49	L
11-9030	Education administrators	427	527	101	-	23.6	-	3.1	69	-
11-9031	Education administrators, preschool and child care center/program	58	77	19	VL	32.0	VH	3.0	10	VL
11-9032	Education administrators, elementary and secondary school	217	262	45	L	20.7	H	3.2	34	VL
11-9033	Education administrators, postsecondary	125	157	32	L	25.9	VH	2.6	21	VL
11-9039	Education administrators, all other	27	32	5	VL	19.1	H	5.6	4	VL
11-9041	Engineering managers	212	231	20	VL	9.2	L	.1	17	VL
11-9051	Food service managers	386	430	44	L	11.5	L	34.7	62	L
11-9061	Funeral directors ²	24	26	2	VL	6.6	VL	11.1	3	VL
11-9071	Gaming managers ³	6	7	1	VL	12.4	L	38.6	1	VL
11-9081	Lodging managers	69	73	5	VL	6.6	VL	50.3	11	VL
11-9111	Medical and health services managers ²	244	315	71	L	29.3	VH	5.3	36	L
11-9121	Natural sciences managers ³	45	51	5	VL	11.3	L	1.2	5	VL
11-9131	Postmasters and mail superintendents	25	25	0	VL	-.5	VL	.0	3	VL
11-9141	Property, real estate, and community association managers	293	330	37	L	12.8	L	46.0	37	L
11-9151	Social and community service managers	129	164	36	L	27.7	VH	6.6	22	VL
11-9199	All other managers	1,256	1,325	69	L	5.5	VL	55.0	142	H
13-0000	Business and financial operations occupations	5,445	6,606	1,162	-	21.3	-	8.3	807	-
13-1000	Business operations specialists	3,177	3,910	733	-	23.1	-	6.9	509	-
13-1011	Agents and business managers of artists, performers, and athletes	15	19	4	VL	27.8	VH	27.0	2	VL
13-1020	Buyers and purchasing agents	419	455	36	-	8.6	-	4.8	58	-
13-1021	Purchasing agents and buyers, farm products ³	19	21	2	VL	10.2	L	9.6	2	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
5,631	-	-	-	-	-	-	-	-	-	-	00-0000
532	-	-	-	-	-	-	-	-	-	-	11-1300
319	-	-	-	-	-	-	-	-	-	-	11-0000
97	-	-	-	-	-	-	-	-	-	-	11-1000
20	L	126,260	VH	VL	VL	Bachelor's plus experience ¹⁰	SC/C	16.1	21.1	62.8	11-1011
76	VH	68,210	VH	VL	VL	Bachelor's plus experience ¹⁰	HS/SC/C	21.3	30.4	48.4	11-1021
1	VL	15,220	VL	VL	VL	Bachelor's plus experience ¹⁰	C	.7	1.5	97.8	11-1031
31	-	-	-	-	-	-	-	-	-	-	11-2000
4	VL	57,130	VH	L	L	Bachelor's plus experience ¹⁰	SC/C	8.5	21.7	69.9	11-2011
25	-	-	-	-	-	-	-	-	-	-	11-2020
8	L	78,250	VH	L	VL	Bachelor's plus experience ¹⁰	SC/C	9.7	23.2	67.2	11-2021
17	L	75,040	VH	L	VL	Bachelor's plus experience ¹⁰	SC/C	9.7	23.2	67.2	11-2022
3	VL	60,640	VH	VL	VL	Bachelor's plus experience ¹⁰	C	9.7	19.8	70.6	11-2031
67	-	-	-	-	-	-	-	-	-	-	11-3000
13	L	52,500	VH	VL	VL	Bachelor's plus experience ¹⁰	HS/SC/C	22.6	36.8	40.6	11-3011
15	L	85,240	VH	L	VL	Bachelor's plus experience ¹⁰	SC/C	7.3	22.4	70.4	11-3021
20	L	73,340	VH	VL	VL	Bachelor's plus experience ¹⁰	SC/C	14.4	24.3	61.3	11-3031
7	VL	64,710	VH	L	VL	Bachelor's plus experience ¹⁰	SC/C	13.4	25.8	60.8	11-3040
5	VL	67,320	VH	L	VL	Bachelor's degree	HS/SC/C	29.8	29.7	40.5	11-3051
3	VL	59,890	VH	L	VL	Bachelor's plus experience ¹⁰	SC/C	15.0	31.0	54.0	11-3061
4	VL	59,660	VH	L	VL	Work experience in a related occupation	HS/SC/C	49.0	28.8	22.2	11-3071
124	-	-	-	-	-	-	-	-	-	-	11-9000
12	-	-	-	-	-	-	-	-	-	-	11-9010
5	VL	43,740	VH	VL	L	Bachelor's plus experience ¹⁰	HS/SC/C	48.0	30.6	21.4	11-9011
7	VL	24,076	L	VL	H	Long-term on-the-job	HS/SC	54.7	28.7	16.6	11-9012 ¹
12	L	63,500	VH	VL	VL	Bachelor's degree	HS/SC/C	41.4	30.6	28.0	11-9021
21	-	-	-	-	-	-	-	-	-	-	11-9030
3	VL	33,340	H	VL	L	Bachelor's plus experience ¹⁰	C	8.6	17.9	73.5	11-9031
10	L	71,490	VH	VL	L	Bachelor's plus experience ¹⁰	C	8.6	17.9	73.5	11-9032
6	VL	64,640	VH	VL	L	Bachelor's plus experience ¹⁰	C	8.6	17.9	73.5	11-9033
1	VL	57,840	VH	VL	L	Bachelor's plus experience ¹⁰	C	8.6	17.9	73.5	11-9039
6	VL	90,930	VH	VL	VL	Bachelor's plus experience ¹⁰	C	7.6	16.9	75.5	11-9041
11	L	35,790	H	L	L	Work experience in a related occupation	HS/SC/C	42.9	32.6	24.4	11-9051
1	VL	43,380	VH	VL	L	Associate degree	SC/C	4.5	56.2	39.2	11-9061 ²
0	VL	54,330	VH	H	L	Work experience in a related occupation	HS/SC	38.0	45.8	16.2	11-9071 ³
2	VL	33,970	H	L	L	Work experience in a related occupation	HS/SC/C	30.6	21.9	47.5	11-9081
12	L	61,370	VH	VL	VL	Bachelor's plus experience ¹⁰	SC/C	9.4	29.6	61.0	11-9111 ²
1	VL	82,250	VH	VL	VL	Bachelor's plus experience ¹⁰	C	8.8	4.2	87.0	11-9121 ³
0	VL	48,540	VH	VL	VL	Work experience in a related occupation	HS/SC/C	21.3	30.4	48.4	11-9131
9	L	36,880	H	VL	H	Bachelor's degree	HS/SC/C	29.1	33.3	37.7	11-9141
6	VL	43,080	VH	L	L	Bachelor's degree	C	9.7	19.2	71.1	11-9151
31	H	66,890	VH	VL	L	Work experience in a related occupation	HS/SC/C	24.7	27.3	48.0	11-9199
213	-	-	-	-	-	-	-	-	-	-	13-0000
129	-	-	-	-	-	-	-	-	-	-	13-1000
1	VL	55,730	VH	L	H	Bachelor's plus experience ¹⁰	C	17.4	17.0	65.6	13-1011
14	-	-	-	-	-	-	-	-	-	-	13-1020
1	VL	40,900	H	VL	L	Work experience in a related occupation	HS/SC/C	55.3	20.1	24.6	13-1021 ³

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
13-1022	Wholesale and retail buyers, except farm products	155	162	7	VL	4.3	VL	9.9	25	VL
13-1023	Purchasing agents, except wholesale, retail, and farm products	245	273	27	L	11.2	L	1.3	31	VL
13-1030	Claims adjusters, appraisers, examiners, and investigators	241	275	34	-	14.0	-	1.9	35	-
13-1031	Claims adjusters, examiners, and investigators	227	260	32	L	14.2	L	1.9	33	VL
13-1032	Insurance appraisers, auto damage	14	16	2	VL	11.7	L	1.8	2	VL
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation	158	173	15	VL	9.8	L	.9	21	VL
13-1051	Cost estimators	188	223	35	L	18.6	H	1.7	27	VL
13-1061	Emergency management specialists ⁵	11	14	3	VL	28.2	VH	.0	2	VL
13-1070	Human resources, training, and labor relations specialists	474	606	131	-	27.7	-	.8	88	-
13-1071	Employment, recruitment, and placement specialists	175	223	48	L	27.3	VH	.8	32	VL
13-1072	Compensation, benefits, and job analysis specialists	91	116	25	L	28.0	VH	.8	17	VL
13-1073	Training and development specialists	209	267	58	L	27.9	VH	.8	39	L
13-1111	Management analysts ²	577	753	176	H	30.4	VH	29	88	L
13-1121	Meeting and convention planners	37	45	8	VL	21.3	H	1.6	7	VL
13-1198	All other business operations specialists ¹	1,056	1,346	290	VH	27.5	VH	.8	181	H
13-2000	Financial specialists	2,268	2,696	429	-	18.9	-	10.2	298	-
13-2011	Accountants and auditors	1,055	1,261	205	H	19.5	H	10.6	128	H
13-2021	Appraisers and assessors of real estate	88	104	16	VL	17.6	H	34.8	11	VL
13-2031	Budget analysts	62	71	9	VL	14.0	L	.0	9	VL
13-2041	Credit analysts	66	78	12	VL	18.7	H	.0	9	VL
13-2050	Financial analysts and advisors	400	486	86	-	21.5	-	14.2	56	-
13-2051	Financial analysts	172	204	32	L	18.7	H	4.8	23	VL
13-2052	Personal financial advisors	126	170	44	L	34.6	VH	37.7	21	VL
13-2053	Insurance underwriters	102	112	10	VL	10.0	L	1.0	12	VL
13-2061	Financial examiners ⁸	25	27	2	VL	8.9	L	.0	4	VL
13-2070	Loan counselors and officers	255	302	48	-	18.7	-	2.3	37	-
13-2071	Loan counselors	31	37	6	VL	17.8	H	2.3	4	VL
13-2072	Loan officers	223	266	42	L	18.8	H	2.3	33	VL
13-2080	Tax examiners, collectors, preparers, and revenue agents	154	176	22	-	14.4	-	13.5	20	-
13-2081	Tax examiners, collectors, and revenue agents	75	79	4	VL	5.0	VL	.0	9	VL
13-2082	Tax preparers	79	98	18	VL	23.2	VH	26.2	12	VL
13-2099	All other financial specialists	162	190	28	L	17.6	H	3.6	24	VL
15-2900	Professional and related occupations	27,687	34,147	6,459	-	23.3	-	6.8	3,972	-
15-0000	Computer and mathematical science occupations ...	3,018	4,069	1,051	-	34.8	-	4.5	452	-
15-1000	Computer specialists	2,911	3,954	1,043	-	35.8	-	4.5	440	-
15-1011	Computer and information scientists, research	23	30	7	VL	30.0	VH	7.4	4	VL
15-1021	Computer programmers	499	571	73	L	14.6	L	3.7	48	L
15-1030	Computer software engineers	675	982	307	-	45.5	-	3.0	109	-
15-1031	Computer software engineers, applications ..	394	573	179	H	45.5	VH	3.1	63	L
15-1032	Computer software engineers, systems software	281	409	128	H	45.5	VH	3.0	45	L
15-1041	Computer support specialists	507	660	153	H	30.3	VH	.6	80	L
15-1051	Computer systems analysts	468	653	184	H	39.4	VH	6.4	78	L
15-1061	Database administrators	110	159	49	L	44.2	VH	.6	19	VL
15-1071	Network and computer systems administrators	251	345	94	H	37.4	VH	.5	40	L

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
5	VL	40,780	H	L	H	Work experience in a related occupation	HS/SC/C	30.4	34.6	35.0	13-1022
9	L	45,090	VH	L	VL	Work experience in a related occupation	HS/SC/C	29.4	33.7	36.9	13-1023
6	-	-	-	-	-	-	-	-	-	-	13-1030
6	VL	43,020	VH	VL	VL	Long-term on-the-job	HS/SC/C	24.1	32.2	43.7	13-1031
0	VL	42,630	VH	VL	VL	Long-term on-the-job	HS/SC/C	24.1	32.2	43.7	13-1032
5	VL	44,800	VH	VL	VL	Long-term on-the-job	SC/C	11.9	30.8	57.3	13-1041
8	L	47,550	VH	VL	VL	Work experience in a related occupation	HS/SC/C	32.8	38.4	28.8	13-1051
1	VL	43,560	VH	VL	L	Work experience in a related occupation	SC/C	19.9	30.8	49.3	13-1061 ⁵
20	-	-	-	-	-	-	-	-	-	-	13-1070
7	L	39,410	H	L	L	Bachelor's degree	SC/C	15.8	28.5	55.7	13-1071
4	VL	45,100	VH	L	L	Bachelor's degree	SC/C	15.8	28.5	55.7	13-1072
9	L	42,800	VH	L	L	Bachelor's degree	SC/C	15.8	28.5	55.7	13-1073
25	H	60,340	VH	L	L	Bachelor's plus experience ¹⁰	C	7.5	15.7	76.8	13-1111 ²
2	VL	37,420	H	L	L	Bachelor's degree	SC/C	15.4	26.7	57.9	13-1121
47	H	50,680	VH	L	L	Bachelor's degree	SC/C	15.8	28.5	55.7	13-1198 ¹
83	-	-	-	-	-	-	-	-	-	-	13-2000
40	H	47,000	VH	VL	L	Bachelor's degree	C	6.7	19.7	73.6	13-2011
3	VL	41,760	H	VL	L	Postsecondary vocational award	SC/C	14.7	29.9	55.4	13-2021
2	VL	52,480	VH	VL	VL	Bachelor's degree	C	7.3	17.6	75.1	13-2031
2	VL	42,910	VH	L	VL	Bachelor's degree	SC/C	17.0	26.7	56.3	13-2041
15	-	-	-	-	-	-	-	-	-	-	13-2050
6	VL	57,100	VH	VL	L	Bachelor's degree	C	5.9	15.9	78.2	13-2051
6	VL	56,680	VH	VL	L	Bachelor's degree	C	4.5	13.7	81.8	13-2052
3	VL	45,590	VH	VL	VL	Bachelor's degree	HS/SC/C	21.3	25.8	53.0	13-2053
1	VL	56,220	VH	VL	L	Bachelor's degree	SC/C	11.3	23.4	65.3	13-2061 ⁸
9	-	-	-	-	-	-	-	-	-	-	13-2070
1	VL	32,010	H	VL	VL	Bachelor's degree	SC/C	19.2	30.5	50.3	13-2071
8	L	43,980	VH	VL	VL	Bachelor's degree	SC/C	19.2	30.5	50.3	13-2072
5	-	-	-	-	-	-	-	-	-	-	13-2080
2	VL	42,250	VH	H	VL	Bachelor's degree	SC/C	14.6	32.1	53.3	13-2081
3	VL	25,630	L	VH	H	Moderate-term on-the-job	SC/C	16.7	29.2	54.0	13-2082
6	VL	44,140	VH	VL	L	Bachelor's degree	HS/SC/C	25.2	29.6	45.2	13-2099
1,179	-	-	-	-	-	-	-	-	-	-	15-2900
146	-	-	-	-	-	-	-	-	-	-	15-0000
143	-	-	-	-	-	-	-	-	-	-	15-1000
1	VL	77,760	VH	L	VL	Doctoral degree	SC/C	10.4	27.2	62.4	15-1011
19	L	60,290	VH	L	VL	Bachelor's degree	SC/C	7.6	22.4	70.1	15-1021
37	-	-	-	-	-	-	-	-	-	-	15-1030
22	L	70,900	VH	L	VL	Bachelor's degree	C	4.1	15.2	80.7	15-1031
16	L	74,040	VH	L	VL	Bachelor's degree	C	4.1	15.2	80.7	15-1032
22	L	39,100	H	H	L	Associate degree	SC/C	15.5	42.7	41.8	15-1041
24	H	62,890	VH	L	VL	Bachelor's degree	SC/C	10.4	27.2	62.4	15-1051
6	VL	55,480	VH	L	VL	Bachelor's degree	SC/C	9.8	23.0	67.1	15-1061
12	L	54,810	VH	L	VL	Bachelor's degree	SC/C	11.1	38.8	50.2	15-1071

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
15-1081	Network systems and data communications analysts	186	292	106	H	57.0	VH	23.6	34	VL
15-1099	All other computer specialists	192	262	70	L	36.5	VH	6.2	31	VL
15-2000	Mathematical science occupations	107	115	8	-	7.4	-	4.7	12	-
15-2011	Actuaries ²	15	18	2	VL	14.9	H	1.4	2	VL
15-2021	Mathematicians ^{2,8}	3	3	0	VL	-1.0	VL	4.6	0	VL
15-2031	Operations research analysts	62	66	4	VL	6.2	VL	5.8	7	VL
15-2041	Statisticians ²	20	21	1	VL	4.8	VL	5.7	2	VL
15-2090	Miscellaneous mathematical science occupations ^{2,8}	7	8	1	VL	11.8	L	.0	1	VL
17-0000	Architecture and engineering occupations	2,587	2,809	222	-	8.6	-	4.1	252	-
17-1000	Architects, surveyors, and cartographers	204	233	29	-	14.0	-	15.6	18	-
17-1010	Architects, except naval	136	161	25	-	18.1	-	21.8	11	-
17-1011	Architects, except landscape and naval	113	133	20	VL	17.2	H	21.4	9	VL
17-1012	Landscape architects	23	28	5	VL	22.2	VH	23.4	2	VL
17-1020	Surveyors, cartographers, and photogrammetrists	64	68	4	-	5.6	-	3.5	7	-
17-1021	Cartographers and photogrammetrists ⁵	9	10	1	VL	15.1	H	3.3	1	VL
17-1022	Surveyors	56	58	2	VL	4.2	VL	3.5	6	VL
17-1099	All other architects, surveyors, and cartographers	3	4	0	VL	10.9	L	.0	0	VL
17-2000	Engineers	1,478	1,587	109	-	7.3	-	3.7	117	-
17-2011	Aerospace engineers ²	78	74	-4	VL	-5.2	VL	1.6	5	VL
17-2021	Agricultural engineers ⁸	3	3	0	VL	10.3	L	12.5	0	VL
17-2031	Biomedical engineers ⁸	8	10	2	VL	26.1	VH	4.9	1	VL
17-2041	Chemical engineers ²	33	33	0	VL	.4	VL	.6	2	VL
17-2051	Civil engineers	228	246	18	VL	8.0	VL	6.7	17	VL
17-2061	Computer hardware engineers	74	78	5	VL	6.1	VL	4.7	6	VL
17-2070	Electrical and electronics engineers	292	309	17	-	5.7	-	3.2	23	-
17-2071	Electrical engineers	156	160	4	VL	2.5	VL	3.3	11	VL
17-2072	Electronics engineers, except computer	136	149	13	VL	9.4	L	3.1	11	VL
17-2081	Environmental engineers	47	65	18	VL	38.2	VH	.4	7	VL
17-2110	Industrial engineers, including health and safety	194	213	20	-	10.1	-	1.5	21	-
17-2111	Health and safety engineers, except mining safety engineers and inspectors	36	38	3	VL	7.9	VL	1.6	4	VL
17-2112	Industrial engineers	158	175	17	VL	10.6	L	1.5	17	VL
17-2121	Marine engineers and naval architects ^{2,8}	5	5	0	VL	-5.0	VL	.0	0	VL
17-2131	Materials engineers	24	25	1	VL	4.1	VL	3.6	2	VL
17-2141	Mechanical engineers	215	225	10	VL	4.8	VL	3.0	14	VL
17-2151	Mining and geological engineers, including mining safety engineers ⁸	5	5	0	VL	-2.7	VL	.0	0	VL
17-2161	Nuclear engineers ^{2,3}	16	16	0	VL	-.1	VL	.0	1	VL
17-2171	Petroleum engineers ²	14	12	-1	VL	-9.8	VL	16.5	1	VL
17-2199	All other engineers	243	267	24	L	9.7	L	4.8	18	VL
17-3000	Drafters, engineering, and mapping technicians	905	990	85	-	9.4	-	2.2	116	-
17-3010	Drafters	216	222	6	-	2.8	-	3.8	28	-
17-3011	Architectural and civil drafters	106	110	4	VL	4.2	VL	3.7	14	VL
17-3012	Electrical and electronics drafters	38	38	0	VL	.7	VL	4.0	5	VL
17-3013	Mechanical drafters	72	74	1	VL	1.9	VL	3.7	9	VL
17-3020	Engineering technicians, except drafters	478	526	48	-	10.1	-	.4	58	-
17-3021	Aerospace engineering and operations technicians ³	15	15	0	VL	1.5	VL	.4	2	VL
17-3022	Civil engineering technicians	92	99	7	VL	7.6	VL	.4	11	VL
17-3023	Electrical and electronic engineering technicians	204	224	20	VL	10.0	L	.4	25	VL
17-3024	Electro-mechanical technicians	31	35	4	VL	11.5	L	.6	4	VL
17-3025	Environmental engineering technicians ³	19	24	5	VL	28.4	VH	.4	3	VL
17-3026	Industrial engineering technicians	62	67	5	VL	8.7	L	.4	7	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	College or higher	
13	L	58,420	VH	L	L	Bachelor's degree	SC/C	11.3	31.2	57.5	15-1081
9	L	54,070	VH	L	VL	Associate degree	SC/C	10.4	27.2	62.4	15-1099
4	-	-	-	-	-	-	-	-	-	-	15-2000
1	VL	69,970	VH	VL	VL	Bachelor's plus experience ¹⁰	C	2.7	9.0	88.4	15-2011 ²
0	VL	76,470	VH	VL	L	Master's degree	SC/C	7.5	24.2	68.3	15-2021 ^{2,8}
2	VL	56,920	VH	VL	VL	Master's degree	SC/C	11.0	30.7	58.3	15-2031
1	VL	57,080	VH	VL	VL	Master's degree	C	6.7	10.4	82.9	15-2041 ²
0	VL	52,060	VH	VL	L	Master's degree	SC/C	7.5	24.2	68.3	15-2090 ^{2,8}
80	-	-	-	-	-	-	-	-	-	-	17-0000
7	-	-	-	-	-	-	-	-	-	-	17-1000
4	-	-	-	-	-	-	-	-	-	-	17-1010
3	VL	56,620	VH	VL	VL	Bachelor's degree	C	3.0	9.8	87.2	17-1011
1	VL	47,400	VH	VL	VL	Bachelor's degree	C	3.0	9.8	87.2	17-1012
3	-	-	-	-	-	-	-	-	-	-	17-1020
0	VL	42,870	VH	VL	L	Bachelor's degree	C	11.3	14.1	74.6	17-1021 ⁵
2	VL	39,970	H	VL	L	Bachelor's degree	C	11.3	14.1	74.6	17-1022
0	VL	43,210	VH	VL	VL	Bachelor's degree	C	11.3	14.1	74.6	17-1099
43	-	-	-	-	-	-	-	-	-	-	17-2000
2	VL	72,750	VH	VL	VL	Bachelor's degree	C	4.5	13.8	81.8	17-2011 ²
0	VL	50,700	VH	L	L	Bachelor's degree	C	5.9	19.2	74.9	17-2021 ⁸
0	VL	60,410	VH	L	VL	Bachelor's degree	C	5.9	19.2	74.9	17-2031 ⁸
1	VL	72,490	VH	L	VL	Bachelor's degree	C	1.7	5.4	92.9	17-2041 ²
5	VL	60,070	VH	VL	VL	Bachelor's degree	C	2.7	9.2	88.1	17-2051
2	VL	72,150	VH	L	VL	Bachelor's degree	SC/C	5.9	25.5	68.6	17-2061
7	-	-	-	-	-	-	-	-	-	-	17-2070
3	VL	68,180	VH	VL	VL	Bachelor's degree	C	4.9	14.7	80.4	17-2071
4	VL	69,930	VH	VL	VL	Bachelor's degree	C	4.9	14.7	80.4	17-2072
3	VL	61,410	VH	VL	VL	Bachelor's degree	C	7.3	6.9	85.9	17-2081
7	-	-	-	-	-	-	-	-	-	-	17-2110
1	VL	58,010	VH	L	VL	Bachelor's degree	SC/C	5.1	26.5	68.3	17-2111
6	VL	62,150	VH	L	VL	Bachelor's degree	SC/C	5.1	26.5	68.3	17-2112
0	VL	66,650	VH	L	VL	Bachelor's degree	C	5.9	19.2	74.9	17-2121 ^{2,8}
1	VL	62,590	VH	VL	VL	Bachelor's degree	C	10.4	20.0	69.6	17-2131
7	VL	62,880	VH	L	VL	Bachelor's degree	C	5.0	17.7	77.3	17-2141
0	VL	61,770	VH	L	VL	Bachelor's degree	C	5.9	19.2	74.9	17-2151 ⁸
0	VL	81,350	VH	VL	VL	Bachelor's degree	C	5.4	5.5	89.1	17-2161 ^{2,3}
0	VL	83,370	VH	VL	VL	Bachelor's degree	C	7.5	9.6	82.9	17-2171 ²
7	VL	70,540	VH	VL	VL	Bachelor's degree	C	3.9	19.1	77.0	17-2199
30	-	-	-	-	-	-	-	-	-	-	17-3000
7	-	-	-	-	-	-	-	-	-	-	17-3010
3	VL	37,330	H	H	VL	Postsecondary vocational award	SC/C	15.5	61.0	23.5	17-3011
1	VL	41,090	H	H	VL	Postsecondary vocational award	SC/C	15.5	61.0	23.5	17-3012
2	VL	40,730	H	H	VL	Postsecondary vocational award	SC/C	15.5	61.0	23.5	17-3013
15	-	-	-	-	-	-	-	-	-	-	17-3020
0	VL	51,650	VH	L	VL	Associate degree	HS/SC	29.9	53.8	16.2	17-3021 ³
3	VL	37,720	H	L	VL	Associate degree	HS/SC	28.8	54.5	16.7	17-3022
6	VL	42,950	VH	L	VL	Associate degree	HS/SC	28.8	54.5	16.7	17-3023
1	VL	38,120	H	L	VL	Associate degree	HS/SC	28.8	54.5	16.7	17-3024
1	VL	36,850	H	L	VL	Associate degree	HS/SC	29.9	53.8	16.2	17-3025 ³
2	VL	41,910	VH	L	VL	Associate degree	HS/SC	28.8	54.5	16.7	17-3026

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
17-3027	Mechanical engineering technicians	55	61	6	VL	11.0	L	.4	7	VL
17-3031	Surveying and mapping technicians	60	74	14	VL	23.2	VH	5.5	11	VL
17-3099	All other drafters, engineering, and mapping technicians	150	167	17	VL	11.3	L	4.5	19	VL
19-0000	Life, physical, and social science occupations	1,237	1,450	212	-	17.2	-	7.3	152	-
19-1000	Life scientists	214	253	39	-	18.2	-	4.3	21	-
19-1010	Agricultural and food scientists ²	18	20	2	VL	9.1	L	8.9	2	VL
19-1020	Biological scientists	75	90	14	-	19.0	-	2.6	7	-
19-1021	Biochemists and biophysicists	17	21	4	VL	22.9	VH	2.6	2	VL
19-1022	Microbiologists	16	20	3	VL	20.0	H	2.6	2	VL
19-1023	Zoologists and wildlife biologists	15	16	1	VL	7.7	VL	2.4	1	VL
19-1029	Biological scientists, all other	27	33	6	VL	22.3	VH	2.7	3	VL
19-1030	Conservation scientists and foresters	33	34	1	-	4.4	-	14.1	2	-
19-1031	Conservation scientists ^{2,3}	19	20	1	VL	4.1	VL	13.6	1	VL
19-1032	Foresters ^{2,3}	14	14	1	VL	4.7	VL	14.6	1	VL
19-1040	Medical scientists	62	79	17	-	27.3	-	1.7	7	-
19-1041	Epidemiologists ^{2,5}	4	5	1	VL	32.5	VH	2.1	0	VL
19-1042	Medical scientists, except epidemiologists ² ..	58	73	16	VL	26.9	VH	1.7	6	VL
19-1099	All other life scientists ²	26	31	5	VL	18.3	H	.0	3	VL
19-2000	Physical scientists	251	267	36	-	14.4	-	4.1	22	-
19-2010	Astronomers and physicists	14	15	1	-	6.8	-	9.9	1	-
19-2011	Astronomers ^{2,5}	1	1	0	VL	4.9	VL	10.2	0	VL
19-2012	Physicists ²	13	14	1	VL	6.9	VL	9.9	1	VL
19-2021	Atmospheric and space scientists ^{2,3}	8	9	1	VL	16.2	H	2.1	1	VL
19-2030	Chemists and materials scientists	91	103	11	-	12.4	-	.2	8	-
19-2031	Chemists	84	95	11	VL	12.7	L	.2	7	VL
19-2032	Materials scientists ³	7	8	1	VL	8.6	VL	.2	1	VL
19-2040	Environmental scientists and geoscientists	101	121	20	-	20.1	-	2.8	9	-
19-2041	Environmental scientists and specialists, including health	65	80	15	VL	23.7	VH	2.9	6	VL
19-2042	Geoscientists, except hydrologists and geographers	28	31	3	VL	11.5	L	2.7	2	VL
19-2043	Hydrologists ⁵	8	10	2	VL	21.0	H	3.0	1	VL
19-2099	All other physical scientists	37	39	2	VL	6.5	VL	15.0	3	VL
19-3000	Social scientists and related occupations	426	512	86	-	20.2	-	16.1	59	-
19-3011	Economists ³	16	18	2	VL	13.4	L	11.5	2	VL
19-3020	Market and survey researchers	155	193	38	-	24.7	-	7.6	22	-
19-3021	Market research analysts	134	166	31	L	23.4	VH	7.3	19	VL
19-3022	Survey researchers ³	20	27	7	VL	33.6	VH	9.3	3	VL
19-3030	Psychologists	139	173	34	-	24.3	-	25.4	19	-
19-3031	Clinical, counseling, and school psychologists	137	171	34	L	24.4	VH	25.4	19	VL
19-3032	Industrial-organizational psychologists ⁵	2	2	0	VL	16.0	H	26.8	0	VL
19-3041	Sociologists ^{2,8}	3	3	0	VL	13.4	L	.0	0	VL
19-3051	Urban and regional planners ²	32	36	3	VL	10.7	L	2.6	5	VL
19-3090	Miscellaneous social scientists and related workers	14	15	1	-	9.2	-	3.3	2	-
19-3091	Anthropologists and archeologists ^{2,5}	5	5	1	VL	12.8	L	3.5	1	VL
19-3092	Geographers ^{2,5}	1	1	0	VL	19.5	H	3.7	0	VL
19-3093	Historians ^{2,5}	2	2	0	VL	6.6	VL	3.5	0	VL
19-3094	Political scientists ^{2,5}	6	6	0	VL	5.9	VL	2.9	1	VL
19-3098	All other social scientists and related workers ..	68	74	7	VL	9.7	L	27.1	9	VL
19-4000	Life, physical, and social science technicians	346	397	51	-	14.8	-	.7	50	-
19-4011	Agricultural and food science technicians	20	22	2	VL	9.3	L	.0	3	VL
19-4021	Biological technicians ²	48	57	9	VL	19.4	H	.1	8	VL
19-4031	Chemical technicians	69	72	3	VL	4.6	VL	.1	9	VL
19-4041	Geological and petroleum technicians ³	11	11	0	VL	1.3	VL	2.1	1	VL
19-4051	Nuclear technicians ⁸	6	6	0	VL	1.5	VL	.0	1	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
2	VL	41,280	H	L	VL	Associate degree	HS/SC	28.8	54.5	16.7	17-3027
4	VL	29,230	H	H	L	Moderate-term on-the-job	HS/SC	47.5	45.4	7.2	17-3031
5	VL	44,450	VH	H	VL	Associate degree	SC/C	15.5	61.0	23.5	17-3099
51	-	-	-	-	-	-	-	-	-	-	19-0000
9	-	-	-	-	-	-	-	-	-	-	19-1000
0	VL	48,670	VH	VL	L	Bachelor's degree	HS/SC/C	25.7	12.0	62.3	19-1010 ²
4	-	-	-	-	-	-	-	-	-	-	19-1020
1	VL	60,390	VH	VL	L	Doctoral degree	C	5	3.6	95.9	19-1021
1	VL	51,020	VH	VL	L	Doctoral degree	C	5	3.6	95.9	19-1022
1	VL	47,740	VH	VL	L	Bachelor's degree	C	5	3.6	95.9	19-1023
1	VL	53,300	VH	VL	L	Bachelor's degree	C	5	3.6	95.9	19-1029
1	-	-	-	-	-	-	-	-	-	-	19-1030
1	VL	50,340	VH	L	VL	Bachelor's degree	SC/C	9.7	23.2	67.1	19-1031 ^{2,3}
0	VL	46,730	VH	L	VL	Bachelor's degree	SC/C	9.7	23.2	67.1	19-1032 ^{2,3}
3	-	-	-	-	-	-	-	-	-	-	19-1040
0	VL	53,840	VH	VL	L	Master's degree	C	6	1.8	97.7	19-1041 ^{2,5}
3	VL	56,980	VH	VL	L	Doctoral degree	C	6	1.8	97.7	19-1042 ²
1	VL	46,140	VH	VL	L	Bachelor's degree	C	6	1.8	97.7	19-1099 ²
10	-	-	-	-	-	-	-	-	-	-	19-2000
1	-	-	-	-	-	-	-	-	-	-	19-2010
0	VL	81,690	VH	VL	VL	Doctoral degree	C	-	6.5	93.5	19-2011 ^{2,5}
1	VL	85,020	VH	VL	VL	Doctoral degree	C	-	6.5	93.5	19-2012 ²
0	VL	60,200	VH	VL	VL	Bachelor's degree	C	4	9.2	90.4	19-2021 ^{2,3}
4	-	-	-	-	-	-	-	-	-	-	19-2030
4	VL	52,890	VH	VL	VL	Bachelor's degree	C	2.9	3.2	94.0	19-2031
0	VL	64,590	VH	VL	VL	Bachelor's degree	C	3.2	5.6	91.2	19-2032 ³
4	-	-	-	-	-	-	-	-	-	-	19-2040
3	VL	47,600	VH	VL	L	Master's degree	C	3.3	4.4	92.3	19-2041
1	VL	67,470	VH	VL	L	Master's degree	C	3.3	4.4	92.3	19-2042
0	VL	56,530	VH	VL	L	Master's degree	C	3.3	4.4	92.3	19-2043 ⁵
1	VL	67,890	VH	VL	VL	Bachelor's degree	C	7	1.3	98.0	19-2099
19	-	-	-	-	-	-	-	-	-	-	19-3000
1	VL	68,550	VH	L	L	Master's degree	C	1.0	8.5	90.4	19-3011 ³
8	-	-	-	-	-	-	-	-	-	-	19-3020
7	VL	53,810	VH	H	L	Master's degree	C	7.4	13.6	79.0	19-3021
1	VL	22,200	L	H	L	Master's degree	C	7.5	14.8	77.6	19-3022 ³
6	-	-	-	-	-	-	-	-	-	-	19-3030
6	VL	51,170	VH	VL	VH	Doctoral degree	C	-	6	99.4	19-3031
0	VL	63,710	VH	VL	VH	Master's degree	C	-	6	99.4	19-3032 ⁵
0	VL	53,160	VH	VL	L	Master's degree	C	3.5	7.1	89.5	19-3041 ^{2,8}
1	VL	49,880	VH	VL	L	Master's degree	C	4.5	-	95.5	19-3051 ²
0	-	-	-	-	-	-	-	-	-	-	19-3090
0	VL	38,620	H	VL	H	Master's degree	C	6.5	11.5	81.9	19-3091 ^{2,5}
0	VL	53,420	VH	VL	H	Master's degree	C	6.5	11.5	81.9	19-3092 ^{2,5}
0	VL	42,030	VH	VL	H	Master's degree	C	6.5	11.5	81.9	19-3093 ^{2,5}
0	VL	80,560	VH	VL	H	Master's degree	C	6.5	11.5	81.9	19-3094 ^{2,5}
2	VL	53,940	VH	VL	H	Master's degree	C	-	6	99.4	19-3098
13	-	-	-	-	-	-	-	-	-	-	19-4000
1	VL	28,580	H	H	VL	Associate degree	HS/SC/C	34.4	26.4	39.3	19-4011
2	VL	32,710	H	L	L	Associate degree	HS/SC/C	24.6	16.4	59.0	19-4021 ²
2	VL	37,430	H	L	VL	Associate degree	HS/SC/C	31.7	39.7	28.7	19-4031
0	VL	39,430	H	H	VL	Associate degree	HS/SC/C	29.2	43.5	27.3	19-4041 ³
0	VL	59,990	VH	L	L	Associate degree	HS/SC/C	26.8	39.0	34.2	19-4051 ⁸

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002--12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002--12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
19-4090	Other life, physical, and social science technicians	55	67	12	-	22.8	-	1.1	8	-
19-4091	Environmental science and protection technicians, including health	28	38	10	VL	36.8	VH	1.1	5	VL
19-4092	Forensic science technicians ⁵	8	10	2	VL	18.9	H	1.0	1	VL
19-4093	Forest and conservation technicians ³	19	20	1	VL	4.0	VL	1.0	2	VL
19-4098	All other life, physical, and social science technicians	137	162	24	L	17.5	H	1.1	20	VL
21-0000	Community and social services occupations	2,190	2,764	574	-	26.2	-	2.3	371	-
21-1000	Counselors, social workers, and other community and social service specialists	1,436	1,853	417	-	29.0	-	2.2	273	-
21-1010	Counselors	526	645	119	-	22.6	-	4.4	85	-
21-1011	Substance abuse and behavioral disorder counselors	67	83	16	VL	23.2	VH	4.5	11	VL
21-1012	Educational, vocational, and school counselors	228	262	34	L	15.0	H	4.4	34	L
21-1013	Marriage and family therapists ³	23	29	5	VL	22.4	VH	4.2	4	VL
21-1014	Mental health counselors	85	107	23	L	26.6	VH	4.1	14	VL
21-1015	Rehabilitation counselors	122	164	41	L	33.8	VH	4.4	22	VL
21-1020	Social workers	477	604	127	-	26.7	-	1.7	89	-
21-1021	Child, family, and school social workers	274	338	64	L	23.2	VH	1.7	49	L
21-1022	Medical and public health social workers	107	138	31	L	28.6	VH	1.7	20	VL
21-1023	Mental health and substance abuse social workers	95	128	33	L	34.5	VH	1.6	19	VL
21-1090	Miscellaneous community and social service specialists	434	605	171	-	39.4	-	.2	99	-
21-1091	Health educators ³	45	54	10	VL	21.9	VH	.2	9	VL
21-1092	Probation officers and correctional treatment specialists	84	97	12	VL	14.6	H	.2	15	VL
21-1093	Social and human service assistants	305	454	149	H	48.7	VH	.2	75	L
21-2000	Religious workers	506	593	87	-	17.3	-	.2	53	-
21-2011	Clergy	400	463	62	L	15.5	H	.3	36	L
21-2021	Directors, religious activities and education ²	105	131	25	L	24.1	VH	.0	17	VL
21-9099	All other counselors, social, and religious workers	248	318	70	L	28.3	VH	6.7	45	L
23-0000	Legal occupations	1,168	1,357	190	-	16.2	-	18.4	119	-
23-1000	Lawyers, judges, and related workers	747	869	122	-	16.4	-	25.1	60	-
23-1011	Lawyers	695	813	118	H	17.0	H	26.8	56	L
23-1020	Judges, magistrates, and other judicial workers	51	56	4	-	8.3	-	2.6	4	-
23-1021	Administrative law judges, adjudicators, and hearing officers	19	20	1	VL	5.8	VL	3.4	1	VL
23-1022	Arbitrators, mediators, and conciliators	6	7	1	VL	13.7	L	11.2	0	VL
23-1023	Judges, magistrate judges, and magistrates	27	29	2	VL	8.7	L	.0	2	VL
23-2000	Legal support workers	320	380	60	-	18.7	-	5.4	46	-
23-2011	Paralegals and legal assistants	200	257	57	L	28.7	VH	2.3	32	VL
23-2090	Miscellaneous legal support workers	121	123	3	-	2.2	-	10.5	14	-
23-2091	Court reporters	18	20	2	VL	12.7	L	11.0	2	VL
23-2092	Law clerks	48	50	2	VL	3.8	VL	10.7	6	VL
23-2093	Title examiners, abstractors, and searchers	55	53	-1	VL	-2.7	VL	10.1	6	VL
23-9099	All other legal and related workers	101	109	8	VL	7.6	VL	9.6	13	VL
25-0000	Education, training, and library occupations	8,530	10,639	2,109	-	24.7	-	2.7	1,436	-
25-1000	Postsecondary teachers	1,581	2,184	603	VH	38.1	VH	.3	245	H
25-2000	Primary, secondary, and special education teachers	4,187	4,983	795	-	19.0	-	.4	613	-
25-2010	Preschool and kindergarten teachers	592	791	199	-	33.6	-	2.2	139	-

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	College or higher	
3	-	-	-	-	-	-	-	-	-	-	19-4090
2	VL	35,320	H	H	H	Associate degree	HS/SC/C	20.7	33.6	45.7	19-4091
0	VL	41,040	H	H	H	Associate degree	HS/SC/C	20.7	33.6	45.7	19-4092 ⁵
1	VL	30,980	H	H	H	Associate degree	HS/SC/C	23.2	36.7	40.1	19-4093 ³
6	VL	34,030	H	H	H	Associate degree	HS/SC/C	20.7	33.6	45.7	19-4096
99	-	-	-	-	-	-	-	-	-	-	21-0000
69	-	-	-	-	-	-	-	-	-	-	21-1000
24	-	-	-	-	-	-	-	-	-	-	21-1010
3	VL	30,180	H	L	L	Master's degree	C	10.6	19.6	69.8	21-1011
9	L	44,100	VH	L	L	Master's degree	C	10.6	19.6	69.8	21-1012
1	VL	35,580	H	L	L	Master's degree	C	9.0	16.3	74.6	21-1013 ³
4	VL	29,940	H	L	L	Master's degree	C	10.6	19.6	69.8	21-1014
7	VL	25,840	L	L	L	Master's degree	C	10.6	19.6	69.8	21-1015
21	-	-	-	-	-	-	-	-	-	-	21-1020
11	L	33,150	H	VL	L	Bachelor's degree	C	7.8	18.4	73.8	21-1021
5	VL	37,380	H	VL	L	Bachelor's degree	C	7.8	18.4	73.8	21-1022
5	VL	32,850	H	VL	L	Master's degree	C	7.8	18.4	73.8	21-1023
25	-	-	-	-	-	-	-	-	-	-	21-1090
2	VL	36,240	H	L	L	Master's degree	SC/C	18.4	23.7	57.9	21-1091 ³
3	VL	38,360	H	L	L	Bachelor's degree	SC/C	15.2	24.0	60.8	21-1092
20	L	23,370	L	L	L	Moderate-term on-the-job	SC/C	15.2	24.0	60.8	21-1093
18	-	-	-	-	-	-	-	-	-	-	21-2000
14	L	33,110	H	VL	L	First professional degree	C	8.2	13.9	77.8	21-2011
4	VL	28,020	H	VL	VH	Bachelor's degree	SC/C	11.1	31.9	57.0	21-2021 ²
12	L	31,150	H	L	L	Bachelor's degree	C	10.6	19.6	69.8	21-9099
33	-	-	-	-	-	-	-	-	-	-	23-0000
22	-	-	-	-	-	-	-	-	-	-	23-1000
21	L	90,290	VH	VL	VL	First professional degree	C	.7	1.5	97.8	23-1011
1	-	-	-	-	-	-	-	-	-	-	23-1020
0	VL	64,540	VH	VL	VL	Bachelor's plus experience ¹⁰	C	.7	1.5	97.8	23-1021
0	VL	47,320	VH	VL	VL	Bachelor's plus experience ¹⁰	C	.7	1.5	97.8	23-1022
1	VL	94,070	VH	VL	VL	Bachelor's plus experience ¹⁰	C	.7	1.5	97.8	23-1023
9	-	-	-	-	-	-	-	-	-	-	23-2000
7	VL	37,950	H	L	L	Associate degree	SC/C	15.8	41.9	42.2	23-2011
2	-	-	-	-	-	-	-	-	-	-	23-2090
0	VL	41,550	H	L	L	Postsecondary vocational award	HS/SC/C	25.2	41.1	33.6	23-2091
1	VL	30,460	H	L	L	Bachelor's degree	HS/SC/C	25.2	41.1	33.6	23-2092
1	VL	32,610	H	L	L	Moderate-term on-the-job	HS/SC/C	25.2	41.1	33.6	23-2093
2	VL	38,700	H	L	L	Bachelor's degree	HS/SC/C	25.2	41.1	33.6	23-9099
389	-	-	-	-	-	-	-	-	-	-	25-0000
96	VH	49,090	VH	VL	VH	Doctoral degree	C	2.8	7.4	89.8	25-1000
173	-	-	-	-	-	-	-	-	-	-	25-2000
27	-	-	-	-	-	-	-	-	-	-	25-2010

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
25-2011	Preschool teachers, except special education	424	577	153	H	36.2	VH	2.2	101	L
25-2012	Kindergarten teachers, except special education	168	214	46	L	27.2	VH	2.2	38	L
25-2020	Elementary and middle school teachers	2,070	2,347	277	-	13.4	-	.1	270	-
25-2021	Elementary school teachers, except special education	1,467	1,690	223	H	15.2	H	.1	196	H
25-2022	Middle school teachers, except special and vocational education	585	637	52	L	9.0	L	.1	72	L
25-2023	Vocational education teachers, middle school	18	19	2	VL	9.0	L	.1	2	VL
25-2030	Secondary school teachers	1,093	1,282	189	-	17.3	-	.0	139	-
25-2031	Secondary school teachers, except special and vocational education	988	1,167	180	H	18.2	H	.0	127	H
25-2032	Vocational education teachers, secondary school	105	115	10	VL	9.0	L	.0	12	VL
25-2040	Special education teachers	433	563	130	H	30.0	VH	.3	65	L
25-3000	Other teachers and instructors	960	1,285	325	-	33.9	-	20.3	207	-
25-3011	Adult literacy, remedial education, and GED teachers and instructors	80	96	16	VL	20.4	H	19.5	15	VL
25-3021	Self-enrichment education teachers	200	281	80	L	40.1	VH	19.9	45	L
25-3999	All other teachers, primary, secondary, and adult	679	908	229	H	33.7	VH	20.5	146	H
25-4000	Librarians, curators, and archivists	309	349	41	-	13.2	-	.3	42	-
25-4010	Archivists, curators, and museum technicians ²	22	26	4	VL	17.0	H	3.4	3	VL
25-4021	Librarians	167	184	17	VL	10.1	L	.1	16	VL
25-4031	Library technicians ³	119	139	20	VL	16.8	H	.0	24	VL
25-9000	Other education, training, and library occupations	1,493	1,838	345	-	23.1	-	.7	328	-
25-9011	Audio-visual collections specialists ⁵	10	11	2	VL	16.3	H	3.1	2	VL
25-9021	Farm and home management advisors ⁵	16	17	1	VL	6.9	VL	2.4	3	VL
25-9031	Instructional coordinators	98	123	25	L	25.4	VH	2.7	20	VL
25-9041	Teacher assistants	1,277	1,571	294	VH	23.0	VH	.3	296	VH
25-9199	All other library, museum, training, and other education workers	93	116	23	L	24.6	VH	3.0	18	VL
27-0000	Arts, design, entertainment, sports, and media occupations	2,377	2,769	393	-	16.5	-	31.8	369	-
27-1000	Art and design occupations	775	900	125	-	16.1	-	40.0	114	-
27-1010	Artists and related workers	149	170	21	-	14.4	-	53.8	24	-
27-1011	Art directors	51	56	6	VL	11.4	L	53.6	8	VL
27-1013	Fine artists, including painters, sculptors, and illustrators	23	27	4	VL	16.5	H	55.5	4	VL
27-1014	Multi-media artists and animators	75	87	12	VL	15.8	H	53.5	12	VL
27-1020	Designers	532	625	93	-	17.4	-	31.7	75	-
27-1021	Commercial and industrial designers	52	59	8	VL	14.6	H	31.0	7	VL
27-1022	Fashion designers	15	16	2	VL	10.6	L	29.3	2	VL
27-1023	Floral designers	104	117	13	VL	12.4	L	32.5	14	VL
27-1024	Graphic designers	212	258	46	L	21.9	VH	31.8	31	VL
27-1025	Interior designers	60	73	13	VL	21.7	VH	32.2	9	VL
27-1026	Merchandise displayers and window trimmers	77	86	9	VL	11.3	L	30.9	10	VL
27-1027	Set and exhibit designers ³	12	15	3	VL	20.9	H	32.2	2	VL
27-1099	All other art and design workers	95	106	11	VL	11.5	L	65.0	14	VL
27-2000	Entertainers and performers, sports and related occupations	606	709	103	-	17.0	-	30.7	105	-
27-2010	Actors, producers, and directors	139	164	25	-	18.0	-	25.9	20	-
27-2011	Actors ²	63	74	11	VL	17.7	H	17.4	9	VL
27-2012	Producers and directors ²	76	90	14	VL	18.2	H	32.8	11	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
20	L	19,270	VL	L	H	Postsecondary vocational award	HS/SC/C	21.7	31.0	47.2	25-2011
7	VL	39,810	H	L	H	Bachelor's degree	HS/SC/C	21.7	31.0	47.2	25-2012
73	-	-	-	-	-	-	-	-	-	-	25-2020
55	VH	41,780	VH	VL	L	Bachelor's degree	C	2.8	5.3	91.8	25-2021
18	L	41,820	VH	VL	L	Bachelor's degree	C	2.8	5.3	91.8	25-2022
1	VL	42,590	VH	VL	L	Bachelor's plus experience ¹⁰	C	2.8	5.3	91.8	25-2023
50	-	-	-	-	-	-	-	-	-	-	25-2030
46	H	43,950	VH	VL	L	Bachelor's degree	C	1.5	3.6	94.9	25-2031
4	VL	44,340	VH	VL	L	Bachelor's plus experience ¹⁰	C	1.5	3.6	94.9	25-2032
23	H	43,450	VH	VL	L	Bachelor's degree	C	3.8	5.9	90.2	25-2040
44	-	-	-	-	-	-	-	-	-	-	25-3000
3	VL	36,400	H	L	VH	Bachelor's degree	SC/C	14.4	30.4	55.2	25-3011
11	L	29,320	H	L	VH	Work experience in a related occupation	SC/C	14.4	30.4	55.2	25-3021
31	H	29,250	H	L	VH	Bachelor's degree	SC/C	14.4	30.4	55.2	25-3999
13	-	-	-	-	-	-	-	-	-	-	25-4000
1	VL	35,270	H	VL	L	Master's degree	C	3.5	8.9	87.6	25-4010 ²
6	VL	43,090	VH	VL	H	Master's degree	C	8.5	15.0	76.5	25-4021
6	VL	24,090	L	L	VH	Short-term on-the-job	HS/SC/C	23.0	34.6	42.3	25-4031 ³
62	-	-	-	-	-	-	-	-	-	-	25-9000
0	VL	32,360	H	VL	H	Moderate-term on-the-job	C	8.2	7.1	84.6	25-9011 ⁵
0	VL	39,430	H	VL	H	Bachelor's degree	C	8.2	7.1	84.6	25-9021 ⁵
4	VL	47,350	VH	VL	H	Master's degree	C	8.2	7.1	84.6	25-9031
54	VH	18,660	VL	L	VH	Short-term on-the-job	HS/SC	43.7	40.0	16.3	25-9041
4	VL	27,280	L	VL	H	Bachelor's degree	C	8.2	7.1	84.6	25-9199
85	-	-	-	-	-	-	-	-	-	-	27-0000
25	-	-	-	-	-	-	-	-	-	-	27-1000
5	-	-	-	-	-	-	-	-	-	-	27-1010
2	VL	61,850	VH	L	H	Bachelor's plus experience ¹⁰	SC/C	13.7	27.8	58.5	27-1011
1	VL	35,260	H	L	H	Long-term on-the-job	SC/C	13.7	27.8	58.5	27-1013
3	VL	43,980	VH	L	H	Bachelor's degree	SC/C	13.7	27.8	58.5	27-1014
16	-	-	-	-	-	-	-	-	-	-	27-1020
1	VL	52,260	VH	L	H	Bachelor's degree	SC/C	17.3	29.7	53.1	27-1021
0	VL	51,290	VH	L	H	Bachelor's degree	SC/C	17.3	29.7	53.1	27-1022
3	VL	19,480	VL	L	H	Moderate-term on-the-job	SC/C	17.3	29.7	53.1	27-1023
7	L	36,680	H	L	H	Bachelor's degree	SC/C	17.3	29.7	53.1	27-1024
2	VL	39,180	H	L	H	Bachelor's degree	SC/C	17.3	29.7	53.1	27-1025
2	VL	22,550	L	L	H	Moderate-term on-the-job	SC/C	17.3	29.7	53.1	27-1026
0	VL	33,870	H	L	H	Bachelor's degree	SC/C	19.8	31.8	48.4	27-1027 ³
3	VL	34,060	H	L	H	Bachelor's degree	SC/C	13.7	27.8	58.5	27-1099
23	-	-	-	-	-	-	-	-	-	-	27-2000
4	-	-	-	-	-	-	-	-	-	-	27-2010
2	VL	23,470	L	VH	VH	Long-term on-the-job	SC/C	4.0	29.6	66.4	27-2011 ²
3	VL	46,240	VH	H	L	Bachelor's plus experience ¹⁰	SC/C	4.8	21.9	73.3	27-2012 ²

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
27-2020	Athletes, coaches, umpires, and related workers	158	187	29	-	18.3	-	27.5	34	-
27-2021	Athletes and sports competitors	15	18	3	VL	19.2	H	31.5	3	VL
27-2022	Coaches and scouts	130	153	24	L	18.3	H	26.6	28	VL
27-2023	Umpires, referees, and other sports officials ³	14	16	2	VL	16.9	H	31.3	3	VL
27-2030	Dancers and choreographers	37	42	5	-	13.3	-	18.1	6	-
27-2031	Dancers ^{2,4}	20	22	2	VL	11.1	L	19.3	3	VL
27-2032	Choreographers ^{2,4}	17	20	3	VL	15.8	H	16.7	3	VL
27-2040	Musicians, singers, and related workers	215	250	35	-	16.2	-	38.6	35	-
27-2041	Music directors and composers	54	62	7	VL	13.5	L	39.3	9	VL
27-2042	Musicians and singers	161	189	27	L	17.1	H	38.3	26	VL
27-2099	All other entertainers and performers, sports and related workers ²	56	65	9	VL	16.4	H	30.2	10	VL
27-3000	Media and communication occupations	700	815	115	-	16.4	-	24.4	107	-
27-3010	Announcers	76	68	-8	VL	-10.1	VL	34.4	8	VL
27-3020	News analysts, reporters and correspondents	66	70	4	VL	6.2	VL	6.3	7	VL
27-3031	Public relations specialists	158	210	52	L	32.9	VH	6.1	32	VL
27-3040	Writers and editors	319	370	51	-	16.0	-	36.0	46	-
27-3041	Editors	130	145	15	VL	11.8	L	12.9	14	VL
27-3042	Technical writers	50	63	13	VL	27.1	VH	7.3	6	VL
27-3043	Writers and authors	139	161	22	L	16.1	H	67.9	25	VL
27-3090	Miscellaneous media and communications workers	82	97	15	-	18.6	-	20.1	15	-
27-3091	Interpreters and translators ^{2,3}	24	29	5	VL	22.0	VH	19.6	5	VL
27-3099	All other media and communication workers ²	58	68	10	VL	17.2	H	20.3	10	VL
27-4000	Media and communication equipment occupations	295	345	50	-	16.9	-	29.8	43	-
27-4010	Broadcast and sound engineering technicians and radio operators	93	111	18	-	19.6	-	9.3	11	-
27-4011	Audio and video equipment technicians	42	53	11	VL	26.8	VH	9.1	5	VL
27-4012	Broadcast technicians	35	39	4	VL	11.3	L	9.6	4	VL
27-4013	Radio operators ⁵	3	3	0	VL	-6.2	VL	11.5	0	VL
27-4014	Sound engineering technicians ³	13	16	3	VL	25.5	VH	8.6	2	VL
27-4021	Photographers	130	148	18	VL	13.6	L	52.5	19	VL
27-4030	Television, video, and motion picture camera operators and editors	48	56	9	-	18.7	-	23.0	7	-
27-4031	Camera operators, television, video, and motion picture ³	28	32	4	VL	13.4	L	23.8	4	VL
27-4032	Film and video editors ⁴	19	25	5	VL	26.4	VH	21.9	3	VL
27-4099	All other media and communication equipment workers ⁸	24	29	5	VL	20.1	H	0	6	VL
29-0000	Healthcare practitioners and technical occupations	6,580	8,288	1,708	-	26.0	-	4.8	820	-
29-1000	Health diagnosing and treating practitioners	4,071	5,125	1,054	-	25.9	-	7.2	403	-
29-1011	Chiropractors ²	49	60	11	VL	23.3	VH	58.5	3	VL
29-1020	Dentists ²	153	159	6	VL	4.1	VL	39.9	7	VL
29-1031	Dietitians and nutritionists	49	58	9	VL	17.8	H	6.3	9	VL
29-1041	Optometrists ²	32	38	5	VL	17.1	H	29.2	2	VL
29-1051	Pharmacists ²	230	299	69	L	30.1	VH	3.4	25	VL
29-1060	Physicians and surgeons	583	697	114	H	19.5	H	16.9	41	L
29-1071	Physician assistants ²	63	94	31	L	48.8	VH	8	8	VL
29-1081	Podiatrists ^{2,3}	13	15	2	VL	15.0	H	44.4	1	VL
29-1111	Registered nurses	2,284	2,908	623	VH	27.3	VH	1.2	236	H
29-1120	Therapists	450	592	142	-	31.7	-	4.4	57	-
29-1121	Audiologists ^{2,3}	11	14	3	VL	29.0	VH	7.1	1	VL
29-1122	Occupational therapists ²	82	110	29	L	35.2	VH	4.0	11	VL
29-1123	Physical therapists ²	137	185	48	L	35.3	VH	5.7	18	VL
29-1124	Radiation therapists ^{2,4}	14	18	4	VL	31.6	VH	0	2	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
6	-	-	-	-	-	-	-	-	-	-	27-2020
1	VL	45,320	VH	H	VH	Long-term on-the-job	SC/C	14.8	25.5	59.7	27-2021
5	VL	27,880	H	H	VH	Long-term on-the-job	SC/C	14.8	25.5	59.7	27-2022
0	VL	20,540	L	H	VH	Long-term on-the-job	SC/C	16.3	22.9	60.8	27-2023 ³
3	-	-	-	-	-	-	-	-	-	-	27-2030
1	VL	21,100	L	H	VH	Long-term on-the-job	HS/SC	57.5	33.5	9.0	27-2031 ^{2,4}
1	VL	29,470	H	H	VH	Work experience in a related occupation	HS/SC	57.5	33.5	9.0	27-2032 ^{2,4}
8	-	-	-	-	-	-	-	-	-	-	27-2040
2	VL	31,310	H	H	VH	Bachelor's plus experience ¹⁰	HS/SC/C	21.0	26.1	52.9	27-2041
6	VL	36,290	H	H	VH	Long-term on-the-job	HS/SC/C	21.0	26.1	52.9	27-2042
2	VL	33,740	H	H	H	Long-term on-the-job	HS/SC/C	34.4	25.4	40.2	27-2099 ²
26	-	-	-	-	-	-	-	-	-	-	27-3000
2	VL	20,620	L	L	VH	Long-term on-the-job	HS/SC/C	45.3	31.6	23.0	27-3010
2	VL	30,510	H	L	L	Bachelor's plus experience ¹⁰	C	6.6	6.5	86.9	27-3020
7	L	41,710	H	H	L	Bachelor's degree	C	7.8	14.3	77.8	27-3031
12	-	-	-	-	-	-	-	-	-	-	27-3040
5	VL	41,170	H	L	L	Bachelor's degree	C	5.6	13.1	81.3	27-3041
3	VL	50,580	VH	H	VL	Bachelor's degree	SC/C	5.3	25.3	69.4	27-3042
5	VL	42,790	VH	H	H	Bachelor's degree	C	3.0	13.1	83.8	27-3043
3	-	-	-	-	-	-	-	-	-	-	27-3090
1	VL	32,590	H	H	VH	Long-term on-the-job	SC/C	16.4	30.9	52.8	27-3091 ^{2,3}
2	VL	38,680	H	H	VH	Long-term on-the-job	SC/C	13.8	32.5	53.7	27-3099 ²
11	-	-	-	-	-	-	-	-	-	-	27-4000
4	-	-	-	-	-	-	-	-	-	-	27-4010
2	VL	31,110	H	L	L	Long-term on-the-job	HS/SC/C	22.7	40.9	36.4	27-4011
1	VL	27,760	H	L	L	Associate degree	HS/SC/C	22.7	40.9	36.4	27-4012
0	VL	31,530	H	L	L	Moderate-term on-the-job	HS/SC/C	22.7	40.9	36.4	27-4013 ⁵
1	VL	36,970	H	L	L	Postsecondary vocational award	HS/SC/C	25.0	41.7	33.3	27-4014 ³
4	VL	24,040	L	H	H	Long-term on-the-job	SC/C	19.4	27.4	53.1	27-4021
2	-	-	-	-	-	-	-	-	-	-	27-4030
1	VL	32,720	H	VH	H	Moderate-term on-the-job	SC/C	14.5	28.2	57.3	27-4031 ³
1	VL	38,270	H	VH	H	Bachelor's degree	SC/C	15.0	34.9	50.1	27-4032 ⁴
1	VL	34,680	H	VH	VH	Moderate-term on-the-job	SC/C	19.0	31.9	49.1	27-4099 ⁸
296	-	-	-	-	-	-	-	-	-	-	29-0000
185	-	-	-	-	-	-	-	-	-	-	29-1000
2	VL	65,330	VH	VL	H	First professional degree	C	2.0	.2	97.9	29-1011 ²
3	VL	123,210	VH	VL	H	First professional degree	C	1.0	3.5	95.5	29-1020 ²
2	VL	41,170	H	VL	H	Bachelor's degree	HS/SC/C	28.9	13.6	57.5	29-1031
1	VL	86,090	VH	VL	H	First professional degree	C	8.4	8.0	83.6	29-1041 ²
11	L	77,050	VH	VL	H	First professional degree	C	1.3	3.8	94.8	29-1051 ²
19	L	145,600	VH	VL	L	First professional degree	C	.8	2.3	96.9	29-1060
4	VL	64,670	VH	VL	H	Bachelor's degree	SC/C	5.1	27.5	67.4	29-1071 ²
1	VL	94,870	VH	VL	H	First professional degree	C	.6	.7	98.7	29-1081 ^{2,3}
110	VH	48,090	VH	VL	H	Associate degree	SC/C	1.8	40.1	58.1	29-1111
23	-	-	-	-	-	-	-	-	-	-	29-1120
1	VL	48,400	VH	VL	H	Master's degree	C	2.5	.3	97.1	29-1121 ^{2,3}
4	VL	51,990	VH	VL	VH	Bachelor's degree	C	.1	13.8	86.1	29-1122 ²
6	VL	57,330	VH	VL	H	Master's degree	C	2.7	5.8	91.4	29-1123 ²
1	VL	50,640	VH	VL	L	Associate degree	SC/C	1.8	57.3	41.0	29-1124 ^{2,4}

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
29-1125	Recreational therapists ²	27	29	2	VL	9.1	L	1.0	3	VL
29-1126	Respiratory therapists ²	86	116	30	L	34.8	VH	.0	11	VL
29-1127	Speech-language pathologists ²	94	120	26	L	27.2	VH	8.2	11	VL
29-1131	Veterinarians ²	58	72	14	VL	25.1	VH	27.7	4	VL
29-1198	All other health diagnosing and treating practitioners ²	107	134	26	L	24.5	VH	14.6	11	VL
29-2000	Health technologists and technicians	2,263	2,857	593	-	26.2	-	.7	373	-
29-2010	Clinical laboratory technologists and technicians	297	355	58	-	19.4	-	1.6	45	-
29-2011	Medical and clinical laboratory technologists	150	179	29	L	19.3	H	1.6	23	VL
29-2012	Medical and clinical laboratory technicians ..	147	176	29	L	19.4	H	1.6	22	VL
29-2021	Dental hygienists	148	212	64	L	43.1	VH	.7	10	VL
29-2030	Diagnostic related technologists and technicians	271	338	67	-	24.8	-	.2	36	-
29-2031	Cardiovascular technologists and technicians	43	58	15	VL	33.5	VH	.2	6	VL
29-2032	Diagnostic medical sonographers	37	45	9	VL	24.0	VH	.2	5	VL
29-2033	Nuclear medicine technologists ³	17	21	4	VL	23.6	VH	.2	2	VL
29-2034	Radiologic technologists and technicians	174	214	40	L	23.0	VH	.2	23	VL
29-2041	Emergency medical technicians and paramedics	179	238	59	L	33.1	VH	.8	36	L
29-2050	Health diagnosing and treating practitioner support technicians	451	574	123	-	27.2	-	.0	92	-
29-2051	Dietetic technicians ²	29	35	6	VL	20.2	H	.0	6	VL
29-2052	Pharmacy technicians ²	211	271	61	L	28.8	VH	.0	44	L
29-2053	Psychiatric technicians ²	60	63	4	VL	5.9	VL	.0	10	VL
29-2054	Respiratory therapy technicians ²	26	35	9	VL	34.2	VH	.0	6	VL
29-2055	Surgical technologists ²	72	92	20	VL	27.9	VH	.0	15	VL
29-2056	Veterinary technologists and technicians ² ..	53	76	23	L	44.1	VH	.0	12	VL
29-2061	Licensed practical and licensed vocational nurses	702	844	142	H	20.2	H	.6	115	L
29-2071	Medical records and health information technicians	147	216	69	L	46.8	VH	1.1	28	VL
29-2081	Opticians, dispensing ²	63	75	11	VL	18.2	H	2.8	11	VL
29-2090	Miscellaneous health technologists and technicians	5	6	1	-	18.9	-	2.1	1	-
29-2091	Orthotists and prosthetists ⁵	5	6	1	VL	18.9	H	2.1	1	VL
29-9000	Other healthcare practitioners and technical occupations	56	65	10	-	17.4	-	1.8	10	-
29-9010	Occupational health and safety specialists and technicians ⁵	41	47	5	VL	13.2	L	2.4	7	VL
29-9090	Miscellaneous health practitioners and technical workers	14	19	4	-	29.9	-	.1	3	-
29-9091	Athletic trainers ⁵	14	19	4	VL	29.9	VH	.1	3	VL
29-9199	All other health practitioners and technical workers	190	241	52	L	27.2	VH	1.8	34	VL
31-3900	Service occupations	26,569	31,905	5,336	-	20.1	-	7.5	7,204	-
31-0000	Healthcare support occupations	3,310	4,452	1,143	-	34.5	-	3.5	795	-
31-1000	Nursing, psychiatric, and home health aides	2,014	2,645	630	-	31.3	-	1.6	517	-
31-1011	Home health aides	580	859	279	VH	48.1	VH	1.6	168	H
31-1012	Nursing aides, orderlies, and attendants	1,375	1,718	343	VH	24.9	VH	1.6	336	VH
31-1013	Psychiatric aides	59	68	9	VL	14.5	L	1.7	13	VL
31-2000	Occupational and physical therapist assistants and aides	114	164	50	-	44.2	-	1.0	26	-
31-2010	Occupational therapist assistants and aides ..	27	38	11	-	40.2	-	2.9	5	-
31-2011	Occupational therapist assistants ^{2,8}	18	26	7	VL	39.2	VH	2.9	3	VL
31-2012	Occupational therapist aides ^{2,8}	8	12	4	VL	42.6	VH	2.9	1	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
1	VL	30,540	H	VL	VH	Bachelor's degree	SC/C	12.5	22.3	65.2	29-1125 ²
6	VL	40,220	H	VL	H	Associate degree	SC/C	4.8	67.6	27.6	29-1126 ²
5	VL	49,450	VH	VL	VH	Master's degree	C	1.7	1.4	97.0	29-1127 ²
3	VL	63,090	VH	VL	L	First professional degree	C	-	1.2	98.8	29-1131 ²
5	VL	52,430	VH	VL	H	Bachelor's degree	C	7.3	9.4	83.3	29-1198 ²
100	-	-	-	-	-	-	-	-	-	-	29-2000
14	-	-	-	-	-	-	-	-	-	-	29-2010
7	VL	42,910	VH	VL	H	Bachelor's degree	SC/C	14.8	35.5	49.7	29-2011
7	VL	29,040	H	VL	H	Associate degree	SC/C	14.8	35.5	49.7	29-2012
8	L	55,320	VH	VL	VH	Associate degree	SC/C	5.3	62.6	32.1	29-2021
12	-	-	-	-	-	-	-	-	-	-	29-2030
2	VL	36,430	H	VL	H	Associate degree	SC/C	10.6	65.8	23.6	29-2031
2	VL	48,660	VH	VL	H	Associate degree	SC/C	10.6	65.8	23.6	29-2032
1	VL	48,750	VH	VL	H	Associate degree	SC/C	12.1	66.6	21.3	29-2033 ³
7	VL	38,970	H	VL	H	Associate degree	SC/C	10.6	65.8	23.6	29-2034
8	L	24,030	L	VL	L	Postsecondary vocational award	HS/SC	24.4	62.9	12.7	29-2041
18	-	-	-	-	-	-	-	-	-	-	29-2050
1	VL	22,490	L	VL	H	Moderate-term on-the-job	HS/SC	33.7	54.0	12.3	29-2051 ²
9	L	22,250	L	VL	H	Moderate-term on-the-job	HS/SC	33.7	54.0	12.3	29-2052 ²
1	VL	25,710	L	VL	H	Moderate-term on-the-job	HS/SC	33.7	54.0	12.3	29-2053 ²
1	VL	34,130	H	VL	H	Postsecondary vocational award	HS/SC	33.7	54.0	12.3	29-2054 ²
3	VL	31,210	H	VL	H	Postsecondary vocational award	HS/SC	33.7	54.0	12.3	29-2055 ²
3	VL	22,950	L	VL	H	Associate degree	HS/SC	33.7	54.0	12.3	29-2056 ²
29	H	31,440	H	L	H	Postsecondary vocational award	HS/SC	23.2	71.7	5.1	29-2061
9	L	23,890	L	H	H	Associate degree	HS/SC	35.5	48.1	16.4	29-2071
2	VL	25,600	L	VL	H	Long-term on-the-job	HS/SC	22.2	60.1	17.7	29-2081 ²
0	-	-	-	-	-	-	-	-	-	-	29-2090
0	VL	46,260	VH	VL	L	Bachelor's degree	HS/SC/C	31.0	47.0	22.0	29-2091 ⁵
2	-	-	-	-	-	-	-	-	-	-	29-9000
1	VL	46,010	VH	VL	L	Bachelor's degree	C	9.2	17.5	73.3	29-9010 ⁵
1	-	-	-	-	-	-	-	-	-	-	29-9090
1	VL	33,820	H	VL	L	Bachelor's degree	C	9.2	17.5	73.3	29-9091 ⁵
9	L	31,690	H	VL	L	Postsecondary vocational award	HS/SC/C	31.0	47.0	22.0	29-9199
1,296	-	-	-	-	-	-	-	-	-	-	31-3900
167	-	-	-	-	-	-	-	-	-	-	31-0000
89	-	-	-	-	-	-	-	-	-	-	31-1000
35	H	18,090	VL	H	H	Short-term on-the-job	HS/SC	62.7	31.4	5.9	31-1011
52	H	19,960	L	H	H	Short-term on-the-job	HS/SC	62.7	31.4	5.9	31-1012
2	VL	22,970	L	H	H	Short-term on-the-job	HS/SC	62.7	31.4	5.9	31-1013
7	-	-	-	-	-	-	-	-	-	-	31-2000
1	-	-	-	-	-	-	-	-	-	-	31-2010
1	VL	36,660	H	VL	H	Associate degree	SC	19.9	63.0	17.1	31-2011 ^{2,8}
0	VL	22,040	L	VL	H	Short-term on-the-job	SC	19.9	63.0	17.1	31-2012 ^{2,8}

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
31-2020	Physical therapist assistants and aides	87	127	40	-	45.4	-	.4	21	-
31-2021	Physical therapist assistants ²	50	73	22	L	44.6	VH	.4	12	VL
31-2022	Physical therapist aides ²	37	54	17	VL	46.4	VH	.4	9	VL
31-9000	Other healthcare support occupations	1,182	1,644	462	-	39.1	-	7.1	252	-
31-9011	Massage therapists	92	117	25	L	27.0	VH	70.1	27	VL
31-9090	Miscellaneous healthcare support occupations	1,090	1,527	437	-	40.1	-	1.8	225	-
31-9091	Dental assistants	266	379	113	H	42.5	VH	.0	39	L
31-9092	Medical assistants	365	579	215	H	58.9	VH	2.3	95	L
31-9093	Medical equipment preparers	36	43	7	VL	18.1	H	2.2	7	VL
31-9094	Medical transcriptionists	101	124	23	L	22.6	VH	2.3	20	VL
31-9095	Pharmacy aides	60	71	11	VL	17.6	H	2.3	11	VL
31-9096	Veterinary assistants and laboratory animal caretakers	63	79	16	VL	26.2	VH	2.1	13	VL
31-9099	All other healthcare support workers	198	251	53	L	26.6	VH	2.5	40	L
33-0000	Protective service occupations	3,116	3,885	769	-	24.7	-	.9	569	-
33-1000	First-line supervisors/managers, protective service workers	266	315	49	-	18.4	-	.7	35	-
33-1010	First-line supervisors/managers, law enforcement workers	147	171	24	-	16.1	-	.0	19	-
33-1011	First-line supervisors/managers of correctional officers	33	40	6	VL	19.0	H	.0	4	VL
33-1012	First-line supervisors/managers of police and detectives	114	131	17	VL	15.2	H	.0	15	VL
33-1021	First-line supervisors/managers of fire fighting and prevention workers ²	63	74	12	VL	18.7	H	.0	8	VL
33-1099	All other first-line supervisors/managers, protective service workers	56	70	13	VL	23.9	VH	3.5	8	VL
33-2000	Fire fighting and prevention workers	296	356	60	-	20.3	-	.0	33	-
33-2011	Fire fighters	282	340	58	L	20.7	H	.0	31	VL
33-2020	Fire inspectors ³	14	16	2	VL	11.6	L	.0	1	VL
33-3000	Law enforcement workers	1,179	1,460	281	-	23.9	-	.0	144	-
33-3010	Bailiffs, correctional officers, and jailers	442	547	105	-	23.7	-	.0	55	-
33-3011	Bailiffs ³	15	16	1	VL	9.5	L	.0	2	VL
33-3012	Correctional officers and jailers	427	531	103	H	24.2	VH	.0	54	L
33-3021	Detectives and criminal investigators	94	115	21	L	22.4	VH	.0	12	VL
33-3031	Fish and game wardens ^{2,8}	8	8	1	VL	7.1	VL	.0	1	VL
33-3041	Parking enforcement workers ^{2,8}	11	12	1	VL	11.5	L	.0	1	VL
33-3050	Police officers	625	779	154	-	24.6	-	.0	74	-
33-3051	Police and sheriff's patrol officers	619	772	153	H	24.7	VH	.0	73	L
33-3052	Transit and railroad police ⁸	6	7	1	VL	15.9	H	.0	1	VL
33-9000	Other protective service workers	1,374	1,753	379	-	27.6	-	1.9	357	-
33-9011	Animal control workers ⁸	11	12	1	VL	12.6	L	1.6	2	VL
33-9021	Private detectives and investigators	48	60	12	VL	25.3	VH	34.7	10	VL
33-9030	Security guards and gaming surveillance officers	1,004	1,324	319	-	31.8	-	.9	261	-
33-9031	Gaming surveillance officers and gaming investigators ⁵	9	11	2	VL	24.6	VH	.9	2	VL
33-9032	Security guards	995	1,313	317	VH	31.8	VH	.9	259	H
33-9031	Crossing guards ²	74	86	12	VL	16.5	H	.0	21	VL
33-9035	All other protective service workers	237	271	34	L	14.3	L	.0	64	L
35-0000	Food preparation and serving related occupations ...	10,200	11,807	1,607	-	15.8	-	1.0	3,498	-
35-1000	Supervisors, food preparation and serving workers	824	952	128	-	15.6	-	4.9	201	-
35-1011	Chefs and head cooks	132	153	21	L	15.8	H	7.4	35	L
35-1022	First-line supervisors/managers of food preparation and serving workers	692	800	107	H	15.5	H	4.5	166	H
35-3000	Cooks and food preparation workers	2,836	3,182	346	-	12.2	-	1.2	879	-

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
5	-	-	-	-	-	-	-	-	-	-	31-2020
3	VL	36,080	H	VL	H	Associate degree	SC/C	16.0	61.5	22.5	31-2021 ²
2	VL	20,670	L	VL	H	Short-term on-the-job	SC/C	16.0	61.5	22.5	31-2022 ²
71	-	-	-	-	-	-	-	-	-	-	31-9000
4	VL	28,610	H	L	VH	Postsecondary vocational award	SC/C	17.7	47.0	35.3	31-9011
66	-	-	-	-	-	-	-	-	-	-	31-9090
19	L	27,240	L	VL	VH	Moderate-term on-the-job	HS/SC	34.2	57.4	8.4	31-9091
28	H	23,940	L	L	H	Moderate-term on-the-job	HS/SC	36.6	49.8	13.5	31-9092
1	VL	22,960	L	L	H	Short-term on-the-job	HS/SC	36.6	49.8	13.5	31-9093
4	VL	27,140	L	L	H	Postsecondary vocational award	HS/SC	36.6	49.8	13.5	31-9094
2	VL	18,430	VL	L	H	Short-term on-the-job	HS/SC	36.6	49.8	13.5	31-9095
3	VL	17,790	VL	L	H	Short-term on-the-job	HS/SC	36.6	49.8	13.5	31-9096
9	L	23,690	L	L	H	Short-term on-the-job	HS/SC	36.6	49.8	13.5	31-9099
165	-	-	-	-	-	-	-	-	-	-	33-0000
14	-	-	-	-	-	-	-	-	-	-	33-1000
7	-	-	-	-	-	-	-	-	-	-	33-1010
2	VL	44,940	VH	VL	VL	Work experience in a related occupation	HS/SC/C	27.7	46.6	25.8	33-1011
5	VL	61,010	VH	VL	VL	Work experience in a related occupation	SC/C	17.2	54.3	28.4	33-1012
4	VL	55,450	VH	VL	VL	Work experience in a related occupation	SC/C	17.8	57.2	25.0	33-1021 ²
3	VL	34,320	H	VL	VL	Work experience in a related occupation	HS/SC/C	31.1	46.2	22.8	33-1099
15	-	-	-	-	-	-	-	-	-	-	33-2000
14	L	36,230	H	VL	VL	Long-term on-the-job	HS/SC	25.9	57.8	16.3	33-2011
1	VL	44,250	VH	H	L	Work experience in a related occupation	HS/SC	44.7	38.9	16.4	33-2020 ³
56	-	-	-	-	-	-	-	-	-	-	33-3000
20	-	-	-	-	-	-	-	-	-	-	33-3010
0	VL	32,710	H	VL	VL	Moderate-term on-the-job	HS/SC	44.8	43.9	11.3	33-3011 ³
19	L	32,670	H	VL	VL	Moderate-term on-the-job	HS/SC	43.1	46.9	10.0	33-3012
5	VL	51,410	VH	VL	VL	Work experience in a related occupation	SC/C	9.4	35.0	55.6	33-3021
0	VL	41,010	H	VL	VL	Long-term on-the-job	HS/SC/C	28.7	47.3	24.0	33-3031 ^{2,8}
0	VL	28,110	H	VL	L	Short-term on-the-job	HS/SC/C	28.7	47.3	24.0	33-3041 ^{2,8}
32	-	-	-	-	-	-	-	-	-	-	33-3050
31	H	42,270	VH	VL	VL	Long-term on-the-job	SC/C	18.8	53.4	27.8	33-3051
0	VL	43,710	VH	VL	VL	Long-term on-the-job	HS/SC/C	21.0	52.1	26.9	33-3052 ⁸
80	-	-	-	-	-	-	-	-	-	-	33-9000
1	VL	24,780	L	VL	VL	Moderate-term on-the-job	HS/SC	53.7	32.6	13.6	33-9011 ⁸
2	VL	29,300	H	L	L	Work experience in a related occupation	SC/C	18.4	35.9	45.8	33-9021
54	-	-	-	-	-	-	-	-	-	-	33-9030
0	VL	23,110	L	H	H	Moderate-term on-the-job	HS/SC	52.5	34.7	12.8	33-9031 ⁵
53	H	19,140	VL	H	H	Short-term on-the-job	HS/SC	52.5	34.7	12.8	33-9032
4	VL	18,680	VL	VH	VH	Short-term on-the-job	HS/SC	76.0	23.3	.6	33-9091 ²
20	L	23,410	L	VH	VH	Short-term on-the-job	HS/SC/C	39.9	37.0	23.1	33-9095
566	-	-	-	-	-	-	-	-	-	-	35-0000
33	-	-	-	-	-	-	-	-	-	-	35-1000
0	VL	27,940	H	H	L	Work experience in a related occupation	HS/SC	47.7	38.0	14.3	35-1011
27	H	24,390	L	H	L	Work experience in a related occupation	HS/SC	56.2	30.3	13.5	35-1012
126	-	-	-	-	-	-	-	-	-	-	35-2000

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
35-2010	Cooks	1,986	2,160	174	-	8.8	-	1.4	587	-
35-2011	Cooks, fast food	588	617	29	L	5.0	VL	1.5	169	H
35-2012	Cooks, institution and cafeteria	436	445	9	VL	2.1	VL	1.5	122	H
35-2013	Cooks, private household ^{1,5}	8	8	0	VL	-5.4	VL	0	2	VL
35-2014	Cooks, restaurant	727	843	116	H	15.9	H	1.3	227	H
35-2015	Cooks, short order	227	247	20	VL	9.0	L	1.4	67	L
35-2021	Food preparation workers	850	1,022	172	H	20.2	H	6	292	VH
35-3000	Food and beverage serving workers	5,211	6,171	960	-	18.4	-	4	1,953	-
35-3011	Bartenders	463	503	40	L	8.6	VL	1.9	104	L
35-3020	Fast food and counter workers	2,457	2,989	532	-	21.7	-	2	1,018	-
35-3021	Combined food preparation and serving workers, including fast food ²	1,990	2,444	454	VH	22.8	VH	1	813	VH
35-3022	Counter attendants, cafeteria, food concession, and coffee shop	467	545	78	L	16.7	H	9	205	H
35-3031	Waiters and waitresses	2,097	2,464	367	VH	17.5	H	3	781	VH
35-3041	Food servers, nonrestaurant	195	215	20	VL	10.4	L	5	49	L
35-9000	Other food preparation and serving related workers	1,328	1,502	173	-	13.0	-	3	465	-
35-9011	Dining room and cafeteria attendants and bartender helpers	409	470	61	L	14.9	H	1	153	H
35-9021	Dishwashers	505	551	46	L	9.0	L	1	174	H
35-9031	Hosts and hostesses, restaurant, lounge, and coffee shop	298	347	49	L	16.4	H	6	103	L
35-9098	All other food preparation and serving related workers	117	134	18	VL	15.2	H	1.5	36	L
37-0000	Building and grounds cleaning and maintenance occupations	5,485	6,386	901	-	16.4	-	11.3	1,186	-
37-1000	Supervisors, building and grounds cleaning and maintenance workers	380	449	70	-	18.4	-	17.0	50	-
37-1011	First-line supervisors/managers of housekeeping and janitorial workers	230	267	37	L	16.2	H	5.6	30	VL
37-1012	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers	150	182	32	L	21.6	H	34.7	19	VL
37-2000	Building cleaning and pest control workers	3,820	4,381	561	-	14.7	-	6.4	871	-
37-2010	Building cleaning workers	3,759	4,309	550	-	14.6	-	6.4	859	-
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	2,267	2,681	414	VH	18.3	H	4.7	492	VH
37-2012	Maids and housekeeping cleaners	1,492	1,629	137	H	9.2	L	9.0	367	VH
37-2021	Pest control workers ²	62	72	10	VL	17.0	H	9.1	12	VL
37-3000	Grounds maintenance workers	1,285	1,555	270	-	21.0	-	23.9	265	-
37-3010	Grounds maintenance workers	1,160	1,410	250	-	21.6	-	23.5	240	-
37-3011	Landscaping and groundskeeping workers	1,074	1,311	237	H	22.0	VH	23.3	223	H
37-3012	Pesticide handlers, sprayers, and applicators, vegetation	27	30	3	VL	9.7	L	26.5	5	VL
37-3013	Tree trimmers and pruners	59	69	11	VL	18.6	H	25.6	12	VL
37-9099	All other building and grounds cleaning and maintenance workers	125	145	20	VL	16.1	H	27.6	25	VL
39-0000	Personal care and service occupations	4,458	5,375	917	-	20.6	-	25.6	1,156	-
39-1000	Supervisors, personal care and service workers	276	305	29	-	10.7	-	45.8	37	-
39-1010	First-line supervisors/managers of gaming workers	60	69	9	-	15.4	-	32.9	10	-
39-1011	Gaming supervisors	39	45	6	VL	15.7	H	33.8	6	VL
39-1012	Slot key persons	21	24	3	VL	14.8	H	31.2	3	VL
39-1021	First-line supervisors/managers of personal service workers	216	236	20	VL	9.4	L	49.4	27	VL
39-2000	Animal care and service workers	151	183	32	-	20.8	-	32.9	40	-
39-2011	Animal trainers	26	30	4	VL	14.3	L	60.0	5	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
79	-	-	-	-	-	-	-	-	-	-	35-2010
21	L	14,350	VL	VH	VH	Short-term on-the-job	HS	78.3	16.4	5.3	35-2011
14	L	18,140	VL	VH	VH	Moderate-term on-the-job	HS	78.3	16.4	5.3	35-2012
0	VL	16,692	VL	VH	VH	Long-term on-the-job	HS	78.3	16.4	5.3	35-2013 ^{1,5}
34	H	19,050	VL	VH	VH	Long-term on-the-job	HS	78.3	16.4	5.3	35-2014
9	L	16,270	VL	VH	VH	Short-term on-the-job	HS	78.3	16.4	5.3	35-2015
47	H	16,330	VL	VH	VH	Short-term on-the-job	HS	76.9	17.7	5.4	35-2021
345	-	-	-	-	-	-	-	-	-	-	35-3000
22	L	15,000	VL	H	VH	Short-term on-the-job	HS/SC	49.2	37.9	12.9	35-3011
170	-	-	-	-	-	-	-	-	-	-	35-3020
132	VH	14,500	VL	VH	VH	Short-term on-the-job	HS	76.7	18.1	5.3	35-3021 ²
38	H	15,230	VL	VH	VH	Short-term on-the-job	HS/SC	72.0	20.1	7.9	35-3022
145	VH	14,150	VL	VH	VH	Short-term on-the-job	HS/SC	55.2	32.3	12.5	35-3031
9	L	15,640	VL	H	VH	Short-term on-the-job	HS/SC	70.2	24.1	5.6	35-3041
61	-	-	-	-	-	-	-	-	-	-	35-9000
20	L	14,530	VL	VH	VH	Short-term on-the-job	HS	78.4	14.6	7.0	35-9011
22	L	14,860	VL	VH	VH	Short-term on-the-job	HS	89.6	7.4	3.0	35-9021
14	L	15,310	VL	VH	VH	Short-term on-the-job	HS/SC	48.1	32.3	19.6	35-9031
5	VL	16,320	VL	VH	VH	Short-term on-the-job	HS	78.3	16.4	5.3	35-9098
200	-	-	-	-	-	-	-	-	-	-	37-0000
14	-	-	-	-	-	-	-	-	-	-	37-1000
9	I	28,140	H	L	L	Work experience in a related occupation	HS/SC	61.7	29.6	8.6	37-1011
5	VL	33,050	H	VL	VL	Work experience in a related occupation	HS/SC	50.7	29.5	19.8	37-1012
131	-	-	-	-	-	-	-	-	-	-	37-2000
129	-	-	-	-	-	-	-	-	-	-	37-2010
84	VH	18,250	VL	H	H	Short-term on-the-job	HS	79.2	17.3	3.5	37-2011
45	H	16,440	VL	VH	VH	Short-term on-the-job	HS	81.5	13.9	4.6	37-2012
2	VL	24,760	L	I	VL	Moderate-term on-the-job	HS/SC	60.2	34.4	5.4	37-2021 ²
55	-	-	-	-	-	-	-	-	-	-	37-3000
50	-	-	-	-	-	-	-	-	-	-	37-3010
47	H	19,770	L	VH	H	Short-term on-the-job	HS	76.5	17.7	5.8	37-3011
1	VL	24,830	L	VH	H	Moderate-term on-the-job	HS	76.5	17.7	5.8	37-3012
2	VL	25,110	L	VH	H	Short-term on-the-job	HS	76.5	17.7	5.8	37-3013
5	VL	20,990	L	VH	H	Short-term on-the-job	HS	79.2	17.3	3.5	37-9099
198	-	-	-	-	-	-	-	-	-	-	39-0000
10	-	-	-	-	-	-	-	-	-	-	39-1000
2	-	-	-	-	-	-	-	-	-	-	39-1010
1	VL	39,290	H	L	H	Work experience in a related occupation	HS/SC/C	35.4	31.5	33.1	39-1011
1	VL	22,870	L	L	H	Postsecondary vocational award	HS/SC/C	35.4	31.5	33.1	39-1012
7	L	28,960	H	VL	H	Work experience in a related occupation	HS/SC	45.6	39.7	14.8	39-1021
7	-	-	-	-	-	-	-	-	-	-	39-2000
1	VL	22,950	L	H	H	Moderate-term on-the-job	HS/SC/C	47.5	28.3	24.2	39-2011

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
39-2021	Nonfarm animal caretakers	125	153	28	L	22.2	VH	27.3	35	L
39-3000	Entertainment attendants and related workers	507	626	119	-	23.6	-	1.0	161	-
39-3010	Gaming services workers	92	115	23	-	24.7	-	2.4	35	-
39-3011	Gaming dealers	78	97	19	VL	24.7	VH	2.5	29	VL
39-3012	Gaming and sports book writers and runners ⁵	14	18	3	VL	24.4	VH	2.0	5	VL
39-3021	Motion picture projectionists ^{2,8}	9	9	0	VL	.4	VL	.0	1	VL
39-3031	Ushers, lobby attendants, and ticket takers ^{2,3} ..	105	121	16	VL	15.5	H	1.1	29	VL
39-3090	Miscellaneous entertainment attendants and related workers	261	333	72	-	27.6	-	.4	83	-
39-3091	Amusement and recreation attendants	234	299	65	L	27.8	VH	.4	75	L
39-3092	Costume attendants ⁵	4	5	1	VL	25.1	VH	.4	1	VL
39-3093	Locker room, coatroom, and dressing room attendants ⁴	23	29	6	VL	26.5	VH	.3	7	VL
39-3199	All other gaming service workers	40	49	9	VL	21.3	H	2.0	13	VL
39-4000	Funeral service workers	33	38	5	-	16.7	-	.0	4	-
39-4011	Embalmers ⁷	7	7	1	VL	8.3	VL	.0	1	VL
39-4021	Funeral attendants ⁷	26	31	5	VL	18.9	H	.0	4	VL
39-5000	Personal appearance workers	754	865	111	-	14.7	-	46.2	94	-
39-5010	Barbers and cosmetologists	651	741	90	-	13.8	-	47.2	80	-
39-5011	Barbers	66	70	4	VL	6.4	VL	72.6	7	VL
39-5012	Hairdressers, hairstylists, and cosmetologists	585	671	86	H	14.7	H	44.3	73	L
39-5090	Miscellaneous personal appearance workers	103	124	21	-	20.3	-	39.6	14	-
39-5091	Makeup artists, theatrical and performance ⁵	2	2	0	VL	18.2	H	50.6	0	VL
39-5092	Manicurists and pedicurists	51	63	12	VL	22.7	VH	39.7	7	VL
39-5093	Shampooers	25	29	4	VL	16.6	H	40.2	3	VL
39-5094	Skin care specialists	25	30	5	VL	19.4	H	38.2	3	VL
39-6000	Transportation, tourism, and lodging attendants ..	248	284	36	-	14.7	-	2.4	63	-
39-6010	Baggage porters, bellhops, and concierges	75	86	11	-	14.6	-	.3	2	-
39-6011	Baggage porters and bellhops ²	58	67	8	VL	14.4	L	.3	16	VL
39-6012	Concierges ^{2,3}	17	20	3	VL	15.3	H	.3	5	VL
39-6020	Tour and travel guides	43	47	4	-	9.3	-	13.3	11	-
39-6021	Tour guides and escorts ²	36	40	4	VL	11.0	L	13.2	10	VL
39-6022	Travel guides ^{2,5}	6	6	0	VL	-.3	VL	14.1	2	VL
39-6030	Transportation attendants	130	152	22	-	16.5	-	.0	31	-
39-6031	Flight attendants ²	104	121	17	VL	16.0	H	.0	25	VL
39-6032	Transportation attendants, except flight attendants and baggage porters ²	26	31	5	VL	18.9	H	.2	6	VL
39-9000	Other personal care and service workers ..	2,490	3,073	583	-	23.4	-	24.3	757	-
39-9011	Child care workers	1,211	1,353	142	H	11.7	L	43.4	429	VH
39-9021	Personal and home care aides	608	854	246	VH	40.5	VH	7.1	181	H
39-9030	Recreation and fitness workers	485	628	143	-	29.5	-	5.6	105	-
39-9031	Fitness trainers and aerobics instructors	183	264	81	H	44.4	VH	5.4	45	L
39-9032	Recreation workers	302	364	62	L	20.5	H	5.7	61	L
39-9041	Residential advisors	53	71	18	VL	33.6	VH	.7	14	VL
39-9099	Personal care and service workers, all other	134	168	35	L	25.9	VH	6.7	28	VL
41-0000	Sales and related occupations	15,260	17,231	1,971	-	12.9	-	11.9	3,624	-
41-1000	Supervisors, sales workers	2,395	2,599	204	-	8.5	-	35.9	336	-
41-1011	First-line supervisors/managers of retail sales workers	1,798	1,962	163	H	9.1	L	33.0	262	H
41-1012	First-line supervisors/managers of non-retail sales workers	597	637	41	L	6.8	VL	44.7	74	L
41-2000	Retail sales workers	8,224	9,392	1,167	-	14.2	-	2.7	2,594	-
41-2010	Cashiers	3,465	3,927	462	-	13.3	-	1.0	1,312	-
41-2011	Cashiers, except gaming	3,432	3,886	454	VH	13.2	L	1.0	1,299	VH

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002—Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
6	VL	17,080	VL	H	VH	Short-term on-the-job	HS/SC	55.6	31.7	12.7	39-2021
30	-	-	-	-	-	-	-	-	-	-	39-3000
5	-	-	-	-	-	-	-	-	-	-	39-3010
4	VL	14,090	VL	H	H	Postsecondary vocational award	HS/SC	51.4	35.3	13.3	39-3011
1	VL	18,660	VL	H	H	Postsecondary vocational award	HS/SC	51.4	35.3	13.3	39-3012 ⁵
0	VL	16,580	VL	VH	H	Short-term on-the-job	HS/SC	56.4	33.4	10.2	39-3021 ^{2,8}
8	L	14,600	VL	VH	VH	Short-term on-the-job	HS/SC	49.8	30.9	19.3	39-3031 ^{2,3}
15	-	-	-	-	-	-	-	-	-	-	39-3090
13	L	14,920	VL	VH	VH	Short-term on-the-job	HS/SC	45.8	40.5	13.7	39-3091
0	VL	24,160	L	VH	VH	Short-term on-the-job	HS/SC	45.8	40.5	13.7	39-3092 ⁵
1	VL	16,930	VL	VH	VH	Short-term on-the-job	HS/SC	56.9	34.0	9.1	39-3093 ⁴
2	VL	17,970	VL	VH	VH	Moderate-term on-the-job	HS/SC	51.4	35.3	13.3	39-3199
1	-	-	-	-	-	-	-	-	-	-	39-4000
0	VL	34,240	H	L	VH	Postsecondary vocational award	HS/SC/C	37.1	42.3	20.6	39-4011 ⁷
1	VL	18,190	VL	L	VH	Short-term on-the-job	HS/SC/C	37.1	42.3	20.6	39-4021 ⁷
26	-	-	-	-	-	-	-	-	-	-	39-5000
22	-	-	-	-	-	-	-	-	-	-	39-5010
2	VL	19,550	VL	VL	H	Postsecondary vocational award	HS/SC	59.7	38.6	1.7	39-5011
20	L	18,960	VL	VL	VH	Postsecondary vocational award	HS/SC	55.7	40.2	4.1	39-5012
4	-	-	-	-	-	-	-	-	-	-	39-5090
0	VL	24,730	L	L	VH	Postsecondary vocational award	HS/SC	58.6	32.8	8.7	39-5091 ⁵
2	VL	17,330	VL	L	VH	Postsecondary vocational award	HS/SC	58.6	32.8	8.7	39-5092
1	VL	14,360	VL	L	VH	Short-term on-the-job	HS/SC	58.6	32.8	8.7	39-5093
1	VL	22,450	L	L	VH	Postsecondary vocational award	HS/SC	58.6	32.8	8.7	39-5094
8	-	-	-	-	-	-	-	-	-	-	39-6000
3	-	-	-	-	-	-	-	-	-	-	39-6010
2	VL	17,860	VL	H	H	Short-term on-the-job	HS/SC	44.5	45.8	9.6	39-6011 ²
1	VL	21,720	L	H	H	Moderate-term on-the-job	HS/SC	51.9	36.1	12.0	39-6012 ^{2,3}
2	-	-	-	-	-	-	-	-	-	-	39-6020
1	VL	18,500	VL	VH	VH	Moderate-term on-the-job	HS/SC/C	41.7	23.7	34.7	39-6021 ²
0	VL	26,110	L	VH	VH	Moderate-term on-the-job	HS/SC/C	41.7	23.7	34.7	39-6022 ^{2,5}
4	-	-	-	-	-	-	-	-	-	-	39-6030
3	VL	43,140	VH	H	VH	Long-term on-the-job	HS/SC/C	25.3	37.9	36.7	39-6031 ²
1	VL	18,720	VL	H	VH	Short-term on-the-job	HS/SC/C	25.3	37.9	36.7	39-6032 ²
116	-	-	-	-	-	-	-	-	-	-	39-9000
47	H	16,350	VL	H	VH	Short-term on-the-job	HS/SC	52.9	34.4	12.7	39-9011
34	H	16,250	VL	VH	VH	Short-term on-the-job	HS/SC	59.6	32.1	8.2	39-9021
25	-	-	-	-	-	-	-	-	-	-	39-9030
12	L	23,950	L	H	VH	Postsecondary vocational award	HS/SC/C	22.0	30.6	47.4	39-9031
13	L	18,060	VL	H	VH	Bachelor's degree	HS/SC/C	22.0	30.6	47.4	39-9032
3	VL	20,700	L	L	H	Moderate-term on-the-job	HS/SC/C	31.8	43.2	24.9	39-9041
6	VL	17,820	VL	VH	VH	Short-term on-the-job	HS/SC/C	40.1	38.9	21.0	39-9099
690	-	-	-	-	-	-	-	-	-	-	41-0000
64	-	-	-	-	-	-	-	-	-	-	41-1000
49	H	29,700	H	VL	L	Work experience in a related occupation	HS/SC/C	41.1	34.4	24.5	41-1011
15	L	53,020	VH	VL	VL	Work experience in a related occupation	HS/SC/C	34.9	28.7	36.4	41-1012
458	-	-	-	-	-	-	-	-	-	-	41-2000
215	-	-	-	-	-	-	-	-	-	-	41-2010
212	VH	15,420	VL	VH	VH	Short-term on-the-job	HS/SC	66.1	25.6	8.3	41-2011

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Percent self-employed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
41-2012	Gaming change persons and booth cashiers ³	33	41	8	VL	24.1	VH	1.0	14	VL
41-2020	Counter and rental clerks and parts salespersons	683	793	109	=	16.0	=	1.3	197	=
41-2021	Counter and rental clerks	436	550	114	H	26.2	VH	1.3	161	H
41-2022	Parts salespersons	248	243	-5	VL	-2.0	VL	1.5	36	L
41-2031	Retail salespersons	4,076	4,672	596	VH	14.6	H	4.3	1,084	VH
41-3000	Sales representatives, services	957	1,033	76	=	7.9	=	17.1	133	=
41-3011	Advertising sales agents	157	178	21	L	13.4	L	9.5	25	VL
41-3021	Insurance sales agents	361	413	32	L	8.4	VL	26.2	54	L
41-3031	Securities, commodities, and financial services sales agents	300	339	39	L	13.0	L	12.8	41	L
41-3041	Travel agents ²	118	102	-16	VL	-13.8	VL	9.2	13	VL
41-4000	Sales representatives, wholesale and manufacturing	1,857	2,213	356	=	19.2	=	4.6	220	=
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products ²	398	475	77	L	19.3	H	4.6	17	L
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products ²	1,459	1,738	279	VH	19.2	H	4.6	173	H
41-9000	Other sales and related workers	1,627	1,994	367	=	9.2	=	26.9	341	=
41-9010	Models, demonstrators, and product promoters	179	210	30	=	16.9	=	42.3	43	=
41-9011	Demonstrators and product promoters	175	204	30	L	17.0	H	42.1	41	L
41-9012	Models ³	5	5	1	VL	14.5	L	49.1	1	VL
41-9020	Real estate brokers and sales agents	407	427	20	=	4.9	=	59.1	46	=
41-9021	Real estate brokers	99	101	2	VL	2.4	VL	59.1	11	VL
41-9022	Real estate sales agents	308	325	18	VL	5.7	VL	59.0	35	L
41-9031	Sales engineers ²	82	98	16	VL	19.9	H	6	7	VL
41-9041	Telemarketers	428	406	-21	VL	-4.9	VL	1.0	88	L
41-9091	Door-to-door sales workers, news and street vendors, and related workers	155	137	-18	VL	-11.8	VL	82.8	37	L
41-9098	All other sales and related workers	577	717	140	H	24.3	VH	7.3	122	L
43-0000	Office and administrative support occupations	23,851	25,464	1,613	=	6.8	=	1.8	4,322	=
43-1000	Supervisors, office and administrative support workers	1,459	1,555	96	=	6.6	=	9	144	=
43-1011	First-line supervisors/managers of office and administrative support workers	1,459	1,555	96	H	6.6	VL	9	144	H
43-2000	Communications equipment operators	304	272	-32	=	-10.5	=	9	55	=
43-2011	Switchboard operators, including answering service	236	236	1	VL	2	VL	9	48	L
43-2021	Telephone operators	50	22	-28	VL	-56.3	VL	1.1	5	VL
43-2099	All other communications equipment operators ³	18	14	-5	VL	-24.6	VL	0	3	VL
43-3000	Financial clerks	3,726	3,987	261	=	7.0	=	4.7	616	=
43-3011	Bill and account collectors	413	514	101	H	24.4	VH	9	84	L
43-3021	Billing and posting clerks and machine operators	507	547	40	L	7.9	VL	2.2	81	L
43-3031	Bookkeeping, accounting, and auditing clerks	1,983	2,042	59	L	3.0	VL	7.9	278	VH
43-3041	Gaming cage workers ³	18	21	3	VL	14.5	L	0	7	VL
43-3051	Payroll and timekeeping clerks	198	211	13	VL	6.5	VL	5	20	VL
43-3061	Procurement clerks	77	72	-5	VL	-6.7	VL	0	13	VL
43-3071	Tellers	530	580	50	L	9.4	L	2	132	H
43-4000	Information and record clerks	5,394	6,310	916	=	17.0	=	.7	1,297	=
43-4011	Brokerage clerks ³	78	67	-11	VL	-14.7	VL	0	9	VL
43-4021	Correspondence clerks ³	33	33	0	VL	-1.4	VL	0	7	VL
43-4031	Court, municipal, and license clerks	106	119	13	VL	12.3	L	2.6	15	VL
43-4041	Credit authorizers, checkers, and clerks	80	74	-6	VL	-6.7	VL	0	15	VL
43-4051	Customer service representatives	1,894	2,354	460	VH	24.3	VH	5	485	VH

See footnotes at end of table.

Table B-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ^a	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
2	VL	19,800	VL	VH	VH	Short-term on the job	HS/SC	66.7	24.7	8.6	41-2012 ³
35	-	-	-	-	-	-	-	-	-	-	41-2020
26	H	17,280	VL	H	VH	Short-term on the job	HS/SC/C	49.1	28.1	22.8	41-2021
7	VL	23,950	L	L	L	Moderate-term on the job	HS/SC	67.3	27.8	4.9	41-2022
208	VH	17,710	VL	L	VH	Short-term on the job	HS/SC/C	42.0	32.9	25.1	41-2031
27	-	-	-	-	-	-	-	-	-	-	41-3000
5	VL	37,870	H	L	L	Moderate-term on the job	HS/SC/C	20.6	29.6	50.8	41-3011
12	L	40,750	H	VL	L	Bachelor's degree	HS/SC/C	22.6	34.0	43.4	41-3021
7	VL	60,990	VH	L	VL	Bachelor's degree	SC/C	11.9	21.0	67.1	41-3031
3	VL	26,630	L	H	H	Postsecondary vocational award	HS/SC/C	27.9	44.1	28.0	41-3041 ²
84	-	-	-	-	-	-	-	-	-	-	41-4000
18	L	55,740	VH	L	L	Moderate-term on the job	HS/SC/C	24.5	27.0	48.5	41-4011 ²
66	VH	42,730	VH	L	L	Moderate-term on the job	HS/SC/C	24.5	27.0	48.5	41-4012 ²
57	-	-	-	-	-	-	-	-	-	-	41-9000
7	-	-	-	-	-	-	-	-	-	-	41-9010
7	VL	20,380	L	H	VH	Moderate-term on the job	HS/SC/C	26.5	38.3	35.2	41-9011
0	VL	21,400	L	H	VH	Moderate-term on the job	HS/SC/C	26.5	38.3	35.2	41-9012 ⁵
10	-	-	-	-	-	-	-	-	-	-	41-9020
2	VL	50,330	VH	VL	H	Work experience in a related occupation	HS/SC/C	22.2	37.0	40.7	41-9021
8	L	30,930	H	VL	H	Postsecondary vocational award	HS/SC/C	22.2	37.0	40.7	41-9022
4	VL	63,660	VH	L	VL	Bachelor's degree	C	4.2	15.9	79.9	41-9031 ²
7	VL	19,550	VL	VH	VH	Short-term on the job	HS/SC	54.8	33.6	11.6	41-9041
4	VL	25,340	L	H	VH	Short-term on the job	HS/SC/C	46.1	31.3	22.6	41-9091
25	H	35,170	H	H	L	Moderate-term on the job	HS/SC/C	22.4	30.5	47.1	41-9098
750	-	-	-	-	-	-	-	-	-	-	43-0000
41	-	-	-	-	-	-	-	-	-	-	43-1000
41	H	38,820	H	L	L	Work experience in a related occupation	HS/SC/C	33.1	39.5	27.3	43-1011
8	-	-	-	-	-	-	-	-	-	-	43-2000
6	VL	21,190	L	H	H	Short-term on the job	HS/SC	54.8	34.0	11.4	43-2011
1	VL	26,800	H	H	H	Short-term on the job	HS/SC	42.3	48.0	9.7	43-2021
0	VL	31,640	H	VH	L	Short-term on the job	HS/SC	53.5	38.5	8.0	43-2099 ⁸
114	-	-	-	-	-	-	-	-	-	-	43-3000
18	L	26,780	L	L	L	Short-term on the job	HS/SC	45.8	35.7	18.7	43-3011
13	L	26,110	L	L	H	Moderate-term on the job	HS/SC	39.3	43.9	16.8	43-3021
43	H	27,380	H	L	H	Moderate-term on the job	HS/SC	40.4	43.8	15.8	43-3031
1	VL	21,780	L	VL	VL	Short-term on the job	HS/SC	43.6	42.5	13.9	43-3041 ⁸
7	VL	29,000	H	L	L	Moderate-term on the job	HS/SC	37.9	46.8	15.2	43-3051
2	VL	29,800	H	VL	L	Short-term on the job	HS/SC	55.7	30.9	13.4	43-3061
31	H	20,400	L	L	VH	Short-term on the job	HS/SC	44.3	42.9	12.7	43-3071
213	-	-	-	-	-	-	-	-	-	-	43-4000
1	VL	33,210	H	H	L	Moderate-term on the job	HS/SC/C	31.7	40.4	27.9	43-4011 ³
1	VL	25,960	L	VL	L	Short-term on the job	HS/SC	44.3	41.0	14.7	43-4021 ⁸
4	VL	27,300	L	VL	L	Short-term on the job	HS/SC	39.9	46.1	14.0	43-4031
2	VL	26,890	L	L	L	Short-term on the job	HS/SC	33.0	48.9	18.1	43-4041
74	VH	26,240	L	H	H	Moderate-term on the job	HS/SC/C	38.3	40.3	21.4	43-4051

See footnotes at end of table.

Table B-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Percent self-employed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
43-4061	Eligibility interviewers, government programs	94	83	-11	VL	-11.6	VL	0	11	VL
43-4071	File clerks	265	264	-1	VL	-3	VL	1.2	62	L
43-4081	Hotel, motel, and resort desk clerks	178	220	42	L	23.9	VH	0	51	L
43-4111	Interviewers, except eligibility and loan	193	247	54	L	28.0	VH	.7	51	L
43-4121	Library assistants, clerical	120	146	26	L	21.5	H	1	30	VL
43-4131	Loan interviewers and clerks	170	146	-24	VL	-14.3	VL	3.5	29	L
43-4141	New accounts clerks ³	99	110	11	VL	11.2	L	0	25	VL
43-4151	Order clerks	330	311	-19	VL	-5.7	VL	.4	60	L
43-4161	Human resources assistants, except payroll and timekeeping	174	207	33	L	19.2	H	0	39	L
43-4171	Receptionists and information clerks	1,100	1,425	325	VH	29.5	VH	1.2	335	VH
43-4181	Reservation and transportation ticket agents and travel clerks ²	177	199	22	L	12.2	L	1.1	37	L
43-4999	All other financial, information, and record clerks	304	306	2	VL	.5	VL	.1	57	L
43-5000	Material recording, scheduling, dispatching, and distributing occupations	4,005	4,025	20	=	.5	=	.6	776	=
43-5011	Cargo and freight agents	59	68	9	VL	15.5	H	1	9	VL
43-5021	Counters and messengers	132	138	5	VL	4.0	VL	6.9	25	VL
43-5030	Dispatchers	262	296	36	=	13.8	=	.6	46	=
43-5031	Police, fire, and ambulance dispatchers	92	104	12	VL	12.7	L	.6	16	VL
43-5032	Dispatchers, except police, fire, and ambulance	170	194	24	L	14.4	L	.6	30	VL
43-5041	Meter readers, utilities ²	54	46	-8	VL	-14.1	VL	.4	9	VL
43-5050	Postal service workers	664	636	-28	=	-4.3	=	.0	42	=
43-5051	Postal service clerks	77	77	0	VL	-.5	VL	0	5	VL
43-5052	Postal service mail carriers ²	334	333	-2	VL	-.5	VL	0	20	VL
43-5053	Postal service mail sorters, processors, and processing machine operators	253	226	-26	VL	-10.5	VL	0	17	VL
43-5061	Production, planning, and expediting clerks ²	286	328	40	L	14.0	L	.4	55	L
43-5071	Shipping, receiving, and traffic clerks	803	827	24	L	3.0	VL	.2	156	H
43-5081	Stock clerks and order fillers	1,628	1,560	-68	VL	-4.2	VL	.4	409	VH
43-5111	Weighers, measurers, checkers, and samplers, recordkeeping	81	93	12	VL	14.6	L	2.0	17	VL
43-5199	All other material recording, scheduling, dispatching, and distributing workers	34	32	-2	VL	-6.9	VL	.0	8	VL
43-6000	Secretaries and administrative assistants	4,104	4,268	164	=	4.5	=	1.6	564	=
43-6011	Executive secretaries and administrative assistants	1,526	1,658	132	H	8.7	L	1.6	218	H
43-6012	Legal secretaries	264	313	50	L	18.8	H	1.7	42	L
43-6013	Medical secretaries	339	398	58	L	17.2	H	1.6	53	L
43-6014	Secretaries, except legal, medical, and executive	1,975	1,918	-57	VL	-2.9	VL	1.6	251	H
43-9000	Other office and administrative support workers	4,858	5,027	169	=	3.5	=	1.3	871	=
43-9011	Computer operators	182	151	-30	VL	-16.8	VL	1.7	25	VL
43-9020	Data entry and information processing workers	633	519	-114	=	-18.1	=	4.1	106	=
43-9021	Data entry keyers	392	371	-21	VL	-5.4	VL	1.4	70	L
43-9022	Word processors and typists	241	148	-93	VL	-38.6	VL	8.6	36	L
43-9031	Desktop publishers ³	35	45	10	VL	29.2	VH	0	5	VL
43-9041	Insurance claims and policy processing clerks	266	276	10	VL	3.6	VL	.3	41	L
43-9051	Mail clerks and mail machine operators, except postal service	170	165	-5	VL	-2.9	VL	0	29	VL
43-9061	Office clerks, general	2,991	3,301	310	VH	10.4	L	.5	577	VH
43-9071	Office machine operators, except computer	96	91	-4	VL	-4.6	VL	0	17	VL
43-9081	Proofreaders and copy markers ^{2,3}	27	26	-1	VL	-4.8	VL	6.2	5	VL
43-9111	Statistical assistants ³	23	22	-2	VL	-7.2	VL	0	2	VL
43-9999	All other secretaries, administrative assistants, and other office support workers	435	431	-4	VL	-.9	VL	3.4	64	L
45-0000	Farming, fishing, and forestry occupations	1,072	1,107	35	=	3.3	=	6.0	239	=

See footnotes at end of table.

Table B-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002—Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
3	VL	31,010	H	VL	VL	Moderate-term on-the-job	HS/SC/C	20.4	50.8	28.8	43-4061
8	L	20,020	L	VH	VH	Short-term on-the-job	HS/SC	44.7	40.5	14.8	43-4071
12	L	17,370	VL	VH	VH	Short-term on-the-job	HS/SC	45.3	38.8	16.0	43-4081
10	L	21,090	L	VH	VH	Short-term on-the-job	HS/SC	30.1	50.3	19.6	43-4111
7	L	19,450	VL	L	VH	Short-term on-the-job	HS/SC/C	25.2	44.7	30.0	43-4121
2	VL	27,830	H	L	L	Short-term on-the-job	HS/SC/C	33.3	42.8	23.9	43-4131
4	VL	25,200	L	L	H	Work experience in a related occupation	HS/SC	41.0	43.0	16.0	43-4141 ³
7	L	24,810	L	H	H	Short-term on-the-job	HS/SC	51.6	36.5	11.8	43-4151
7	VL	30,410	H	VL	H	Short-term on-the-job	HS/SC/C	28.8	48.8	22.4	43-4161
59	VH	21,150	L	H	VH	Short-term on-the-job	HS/SC	49.7	38.6	11.8	43-4171
7	VL	25,350	L	L	H	Short-term on-the-job	HS/SC/C	31.8	45.3	23.1	43-4181 ²
5	VL	30,030	H	VL	L	Short-term on-the-job	HS/SC/C	26.8	50.3	22.9	43-4999
131	-	-	-	-	-	-	-	-	-	-	43-5000
2	VL	31,410	H	L	VL	Moderate-term on-the-job	HS/SC	50.1	36.7	13.2	43-5011
4	VL	19,390	VL	H	VH	Short-term on-the-job	HS/SC	53.2	36.6	10.2	43-5021
9	-	-	-	-	-	-	-	-	-	-	43-5030
3	VL	27,660	H	L	L	Moderate-term on-the-job	HS/SC	44.1	43.7	12.2	43-5031
6	VL	30,280	H	L	L	Moderate-term on-the-job	HS/SC	44.1	43.7	12.2	43-5032
2	VL	26,830	H	L	VL	Short-term on-the-job	HS/SC	57.2	38.8	4.1	43-5041 ²
19	-	-	-	-	-	-	-	-	-	-	43-5050
2	VL	39,700	H	VL	L	Short-term on-the-job	HS/SC	43.8	41.5	14.7	43-5051
10	L	39,530	H	VL	VL	Short-term on-the-job	HS/SC	52.0	40.2	7.8	43-5052 ²
7	VL	38,150	H	H	VL	Short-term on-the-job	HS/SC	44.5	40.7	14.7	43-5053
11	L	33,650	H	H	L	Short-term on-the-job	HS/SC/C	37.0	35.2	27.8	43-5061 ²
19	L	23,420	L	H	L	Short-term on-the-job	HS/SC	64.5	28.6	6.9	43-5071
60	VH	19,270	VL	VH	H	Short-term on-the-job	HS/SC	65.4	26.0	8.6	43-5081
3	VL	24,170	L	H	L	Short-term on-the-job	HS/SC	56.4	30.6	13.0	43-5111
1	VL	25,890	L	L	H	Short-term on-the-job	HS/SC	65.4	26.0	8.6	43-5199
103	-	-	-	-	-	-	-	-	-	-	43-6000
42	H	33,410	H	L	H	Moderate-term on-the-job	HS/SC	37.2	47.0	15.9	43-6011
10	L	35,020	H	L	H	Postsecondary vocational award	HS/SC	37.2	47.0	15.9	43-6012
12	L	25,430	L	L	H	Postsecondary vocational award	HS/SC	37.2	47.0	15.9	43-6013
38	H	25,290	L	L	H	Moderate-term on-the-job	HS/SC	37.2	47.0	15.9	43-6014
140	-	-	-	-	-	-	-	-	-	-	43-9000
4	VL	29,650	H	H	L	Moderate-term on-the-job	HS/SC/C	39.1	40.5	20.4	43-9011
15	-	-	-	-	-	-	-	-	-	-	43-9020
9	L	22,390	L	H	H	Moderate-term on-the-job	HS/SC	45.1	41.0	13.9	43-9021
5	VL	26,730	L	H	H	Moderate-term on-the-job	HS/SC	37.6	48.2	14.2	43-9022
2	VL	31,620	H	VL	H	Postsecondary vocational award	HS/SC	42.6	41.1	16.3	43-9031 ⁶
5	VL	28,670	H	L	L	Moderate-term on-the-job	HS/SC	39.4	44.4	16.2	43-9041
5	VL	21,190	L	VH	H	Short-term on-the-job	HS/SC	56.9	36.0	7.1	43-9051
97	VH	22,280	L	H	VH	Short-term on-the-job	HS/SC	40.9	42.4	16.7	43-9061
2	VL	21,770	L	H	H	Short-term on-the-job	HS/SC	58.3	31.9	9.9	43-9071
1	VL	24,280	L	H	H	Short-term on-the-job	HS/SC/C	32.3	33.7	34.0	43-9081 ^{2,3}
0	VL	29,470	H	H	L	Moderate-term on-the-job	HS/SC/C	35.6	35.8	28.6	43-9111 ³
9	L	25,840	L	L	H	Short-term on-the-job	HS/SC/C	29.5	37.8	32.6	43-9999
33	-	-	-	-	-	-	-	-	-	-	45-0000

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
45-1000	Supervisors, farming, fishing, and forestry workers	52	58	6	VL	11.4	L	16.9	7	VL
45-2000	Agricultural workers	804	840	36	-	4.5	-	1.4	188	-
45-2011	Agricultural inspectors ³	16	17	1	VL	6.8	VL	0	4	VL
45-2021	Animal breeders ⁸	9	10	1	VL	6.1	VL	47.4	1	VL
45-2041	Graders and sorters, agricultural products	49	52	3	VL	6.7	VL	0	11	VL
45-2090	Miscellaneous agricultural workers	731	762	31	-	4.3	-	1.0	173	-
45-2091	Agricultural equipment operators	61	65	4	VL	7.3	VL	1.0	15	VL
45-2092	Farmworkers and laborers, crop, nursery, and greenhouse	617	641	24	L	4.0	VL	1.0	145	H
45-2093	Farmworkers, farm and ranch animals	53	56	2	VL	4.4	VL	6	13	VL
45-3000	Fishing and hunting workers	36	26	-10	-	-25.5	-	54.3	6	-
45-3011	Fishers and related fishing workers ²	36	27	-10	VL	-26.8	VL	53.7	6	VL
45-3021	Hunters and trappers ^{2,8}	1	2	0	VL	6.4	VL	70.2	0	VL
45-4000	Forest, conservation, and logging workers	81	80	-2	-	-1.9	-	28.1	16	-
45-4011	Forest and conservation workers ³	14	15	1	VL	4.5	VL	11.8	3	VL
45-4020	Logging workers	67	65	-2	-	-3.2	-	31.5	14	-
45-4021	Fallers ⁵	14	14	0	VL	-3.4	VL	25.9	3	VL
45-4022	Logging equipment operators ³	43	41	-2	VL	-3.6	VL	29.3	9	VL
45-4023	Log graders and scalers ⁵	10	10	0	VL	-1.2	VL	47.8	2	VL
45-9099	All other farming, fishing, and forestry workers	96	101	4	VL	4.5	VL	9	22	VL
47-0000	Construction and extraction occupations	7,292	8,388	1,096	-	15.0	-	16.5	1,110	-
47-1000	Supervisors, construction and extraction workers	633	722	89	-	14.1	-	20.1	72	-
47-1011	First-line supervisors/managers of construction trades and extraction workers ²	633	722	89	H	14.1	L	20.1	72	L
47-2000	Construction trades and related workers	5,596	6,452	857	-	15.3	-	18.7	859	-
47-2011	Boilermakers ^{2,3}	25	25	0	VL	1.7	VL	0	2	VL
47-2020	Brickmasons, blockmasons, and stonemasons	165	188	23	-	14.2	-	27.8	25	-
47-2021	Brickmasons and blockmasons ²	148	169	21	L	14.2	L	27.9	22	VL
47-2022	Stonemasons ²	17	19	2	VL	14.1	L	26.5	3	VL
47-2031	Carpenters	1,209	1,331	122	H	10.1	L	29.7	202	H
47-2040	Carpet, floor, and tile installers and finishers	164	191	27	-	16.8	-	42.6	21	-
47-2041	Carpet installers	82	96	14	VL	16.8	H	53.5	10	VL
47-2042	Floor layers, except carpet, wood, and hard tiles	31	35	4	VL	13.4	L	52.0	4	VL
47-2043	Floor sanders and finishers	17	18	1	VL	4.2	VL	55.5	2	VL
47-2044	Tile and marble setters	33	42	9	VL	26.5	VH	0	5	VL
47-2050	Cement masons, concrete finishers, and terrazzo workers	188	236	48	-	25.7	-	5.2	27	-
47-2051	Cement masons and concrete finishers	182	229	47	L	26.1	VH	5.2	27	VL
47-2053	Terrazzo workers and finishers ⁵	6	7	1	VL	15.2	H	4.9	1	VL
47-2061	Construction laborers	938	1,070	133	H	14.2	L	13.3	177	H
47-2070	Construction equipment operators	416	460	45	-	10.7	-	3.6	57	-
47-2071	Paving, surfacing, and tamping equipment operators ^{2,3}	56	65	7	VL	12.6	L	2.3	9	VL
47-2072	Pile-driver operators ⁸	5	6	0	VL	8.2	VL	13.6	1	VL
47-2073	Operating engineers and other construction equipment operators	353	389	37	L	10.4	L	3.7	47	L
47-2080	Drywall installers, ceiling tile installers, and tapers	176	214	37	-	21.3	-	18.5	24	-
47-2081	Drywall and ceiling tile installers	135	164	29	L	21.4	H	18.4	19	VL
47-2082	Tapers	41	49	8	VL	20.8	H	19.1	6	VL
47-2111	Electricians	659	814	154	H	23.4	VH	9.1	71	L
47-2121	Glaziers ²	49	57	8	VL	17.2	H	5.6	8	VL
47-2130	Insulation workers	53	62	8	VL	15.8	H	3.9	9	VL
47-2140	Painters and paperhangers	468	521	53	-	11.4	-	42.2	76	-
47-2141	Painters, construction and maintenance	448	500	52	L	11.6	L	41.7	73	L

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
2	VL	31,140	H	H	VL	Work experience in a related occupation	HS	77.6	12.1	10.4	45-1000
26	-	-	-	-	-	-	-	-	-	-	45-2000
0	VL	26,620	H	L	VL	Work experience in a related occupation	HS/SC/C	36.6	31.4	32.0	45-2011 ³
0	VL	25,090	L	VH	H	Moderate-term on-the-job	HS	81.8	12.9	5.3	45-2021 ⁸
2	VL	15,940	VL	VH	L	Work experience in a related occupation	HS	80.9	12.0	7.1	45-2041
24	-	-	-	-	-	-	-	-	-	-	45-2090
2	VL	17,290	VL	VH	L	Moderate-term on-the-job	HS	83.6	11.8	4.6	45-2091
20	L	15,070	VL	VH	L	Short-term on-the-job	HS	83.6	11.8	4.6	45-2092
2	VL	17,090	VL	VH	L	Short-term on-the-job	HS	83.6	11.8	4.6	45-2093
1	-	-	-	-	-	-	-	-	-	-	45-3000
1	VL	20,710	L	VH	VL	Moderate-term on-the-job	HS	75.4	16.2	8.4	45-3011 ²
0	VL	30,660	H	VH	H	Moderate-term on-the-job	HS	74.0	18.0	8.0	45-3021 ^{2,8}
2	-	-	-	-	-	-	-	-	-	-	45-4000
0	VL	18,960	VL	VH	L	Moderate-term on-the-job	HS	73.2	16.3	10.6	45-4011 ³
1	-	-	-	-	-	-	-	-	-	-	45-4020
0	VL	26,160	H	VH	L	Moderate-term on-the-job	HS	85.1	10.8	4.1	45-4021 ⁵
1	VL	26,790	L	VH	L	Moderate-term on-the-job	HS	83.3	12.5	4.2	45-4022 ³
0	VL	27,200	L	VH	L	Moderate-term on-the-job	HS	85.1	10.6	4.1	45-4023 ⁵
3	VL	21,450	L	VH	L	Moderate-term on-the-job	HS	83.6	11.8	4.6	45-5099
255	-	-	-	-	-	-	-	-	-	-	47-0000
20	-	-	-	-	-	-	-	-	-	-	47-1000
20	L	47,670	VH	L	VL	Work experience in a related occupation	HS/SC	63.0	26.9	10.1	47-1011 ²
189	-	-	-	-	-	-	-	-	-	-	47-2000
1	VL	41,960	VH	VH	VL	Long-term on-the-job	HS/SC	66.0	31.2	2.8	47-2011 ^{2,3}
5	-	-	-	-	-	-	-	-	-	-	47-2020
4	VL	41,840	VH	VH	VL	Long-term on-the-job	HS	83.2	13.3	3.5	47-2021 ²
0	VL	34,040	H	VH	VL	Long-term on-the-job	HS	83.2	13.3	3.5	47-2022 ²
32	H	34,190	H	VH	VL	Long-term on-the-job	HS/SC	72.7	22.2	5.1	47-2031
5	-	-	-	-	-	-	-	-	-	-	47-2040
3	VL	32,590	H	H	L	Moderate-term on-the-job	HS	77.6	18.4	3.9	47-2041
1	VL	33,590	H	H	L	Moderate-term on-the-job	HS	77.6	18.4	3.9	47-2042
0	VL	27,500	H	H	L	Moderate-term on-the-job	HS	77.6	18.4	3.9	47-2043
1	VL	35,770	H	VH	VL	Long-term on-the-job	HS	77.6	18.4	3.9	47-2044
9	-	-	-	-	-	-	-	-	-	-	47-2050
8	L	30,660	H	VH	VL	Moderate-term on-the-job	HS	85.4	12.7	2.0	47-2051
0	VL	27,910	H	VH	VL	Long-term on-the-job	HS	85.4	12.7	2.0	47-2053 ⁵
26	H	24,740	L	VH	L	Moderate-term on-the-job	HS	79.5	15.6	4.8	47-2061
14	-	-	-	-	-	-	-	-	-	-	47-2070
2	VL	28,860	H	VH	VL	Moderate-term on-the-job	HS	88.4	11.4	.2	47-2071 ^{2,3}
0	VL	45,420	VH	VH	L	Moderate-term on-the-job	HS	80.5	17.1	2.4	47-2072 ⁸
13	L	35,240	H	VH	VL	Moderate-term on-the-job	HS	78.5	19.1	2.4	47-2073
8	-	-	-	-	-	-	-	-	-	-	47-2080
6	VL	33,710	H	VH	VL	Moderate-term on-the-job	HS	83.8	13.8	2.3	47-2081
2	VL	39,000	H	VH	VL	Moderate-term on-the-job	HS	83.8	13.8	2.3	47-2082
28	H	41,390	H	H	VL	Long-term on-the-job	HS/SC	49.8	44.1	6.1	47-2111
2	VL	31,620	H	VH	VL	Long-term on-the-job	HS/SC	61.3	33.9	4.8	47-2121 ²
2	VL	28,930	H	VH	VL	Moderate-term on-the-job	HS/SC	66.1	30.6	3.4	47-2130
12	-	-	-	-	-	-	-	-	-	-	47-2140
12	L	29,070	H	VH	L	Moderate-term on-the-job	HS	77.2	16.9	5.9	47-2141

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self-em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
47-2142	Paperhangers ^{2,3}	20	21	1	VL	5.9	VL	53.1	3	VL
47-2150	Pipelayers, plumbers, pipefitters, and steamfitters	550	649	99	-	18.0	-	10.4	67	-
47-2151	Pipelayers	58	65	7	VL	11.8	L	11.2	7	VL
47-2152	Plumbers, pipefitters, and steamfitters	492	584	92	H	18.7	H	10.3	60	L
47-2161	Plasterers and stucco masons ²	59	67	8	VL	13.5	L	9.6	9	VL
47-2171	Reinforcing iron and rebar workers ⁴	29	33	5	VL	16.7	H	.0	3	VL
47-2181	Roofers	166	197	31	L	18.6	H	31.9	41	L
47-2211	Sheet metal workers	205	246	41	L	19.8	H	3.1	32	VL
47-2221	Structural iron and steel workers	78	90	12	VL	15.9	H	6.2	9	VL
47-3000	Helpers, construction trades	431	490	59	-	13.7	-	.4	77	-
47-3010	Helpers, construction trades	431	490	59	-	13.7	-	.4	77	-
47-3011	Helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters ⁴	59	61	1	VL	2.2	VL	.4	9	VL
47-3012	Helpers—carpenters	97	111	14	VL	14.0	L	.4	17	VL
47-3013	Helpers—electricians	99	117	18	VL	18.0	H	.4	18	VL
47-3014	Helpers—painters, paperhangers, plasterers, and stucco masons ⁵	31	36	5	VL	15.9	H	.3	6	VL
47-3015	Helpers—pipelayers, plumbers, pipefitters, and steamfitters ³	79	88	9	VL	10.9	L	.4	14	VL
47-3016	Helpers—roofers ⁵	21	25	4	VL	19.3	H	.4	4	VL
47-3019	All other helpers, construction trades ⁴	44	53	9	VL	19.4	H	.4	8	VL
47-4000	Other construction and related workers	354	408	54	-	15.2	-	5.2	58	-
47-4011	Construction and building inspectors ²	84	95	12	VL	13.8	L	8.1	10	VL
47-4021	Elevator installers and repairers ²	21	25	4	VL	17.1	H	.0	3	VL
47-4031	Fence erectors	27	31	4	VL	13.4	L	23.0	4	VL
47-4041	Hazardous materials removal workers	38	54	16	VL	43.1	VH	.0	9	VL
47-4051	Highway maintenance workers	154	170	16	VL	10.4	L	1.6	26	VL
47-4061	Rail-track laying and maintenance equipment operators ⁶	11	9	-1	VL	-11.5	VL	.8	1	VL
47-4071	Septic tank servicers and sewer pipe cleaners ⁴	18	22	4	VL	21.2	H	13.9	4	VL
47-4090	Miscellaneous construction and related workers	2	3	0	-	16.5	-	6.4	0	-
47-4091	Segmental pavers ⁵	2	3	0	VL	16.5	H	6.4	0	VL
47-4999	All other construction trades and related workers	110	146	35	L	32.0	VH	5.3	19	VL
47-5000	Extraction workers	167	169	2	-	1.2	-	2.4	25	-
47-5010	Derrick, rotary drill, and service unit operators, oil, gas, and mining	41	41	0	-	.6	-	1.1	5	-
47-5011	Derrick operators, oil and gas ^{2,6}	15	15	0	VL	.8	VL	1.1	2	VL
47-5012	Rotary drill operators, oil and gas ^{2,6}	14	14	0	VL	1.5	VL	1.2	2	VL
47-5013	Service unit operators, oil, gas, and mining ^{2,6}	13	13	0	VL	-.8	VL	1.1	2	VL
47-5021	Earth drillers, except oil and gas ²	23	25	2	VL	7.7	VL	14.9	3	VL
47-5031	Explosives workers, ordnance handling experts, and blasters ^{2,6}	5	5	0	VL	2.0	VL	2.4	1	VL
47-5040	Mining machine operators	18	16	-2	-	-13.3	-	.0	3	-
47-5041	Continuous mining machine operators ^{2,3}	8	7	-2	VL	-18.5	VL	.0	1	VL
47-5042	Mine cutting and channeling machine operators ^{2,4}	5	5	0	VL	-7.1	VL	.0	1	VL
47-5049	All other mining machine operators ^{2,5}	4	4	0	VL	-10.8	VL	.0	1	VL
47-5051	Rock splitters, quarry ⁵	3	3	0	VL	14.3	L	.4	0	VL
47-5061	Roof bolters, mining ^{2,6}	4	3	-1	VL	-27.7	VL	.0	1	VL
47-5071	Roustabouts, oil and gas ^{2,6}	32	34	2	VL	6.4	VL	.0	5	VL
47-5081	Helpers—extraction workers ^{2,6}	29	30	1	VL	3.9	VL	.0	6	VL
47-5099	Extraction workers, all other ³	12	12	0	VL	-.8	VL	.4	2	VL
49-0000	Installation, maintenance, and repair occupations	5,696	6,472	776	-	13.6	-	6.4	716	-
49-1000	Supervisors of installation, maintenance, and repair workers	444	512	68	-	15.4	-	.1	45	-
49-1011	First-line supervisors/managers of mechanics, installers, and repairers	444	512	68	L	15.4	H	.1	45	L

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
0	VL	31,650	H	H	L	Moderate-term on-the-job	HS/SC	57.9	34.9	7.2	47-2142 ^{2,3}
23	-	-	-	-	-	-	-	-	-	-	47-2150
2	VL	28,500	H	H	VL	Moderate-term on-the-job	HS/SC	67.0	28.8	4.2	47-2151
21	L	40,170	H	H	VL	Long-term on-the-job	HS/SC	67.0	28.8	4.2	47-2152
2	VL	33,100	H	VH	L	Long-term on-the-job	HS	66.7	10.6	2.7	47-2161 ²
1	VL	36,740	H	VL	VL	Long-term on-the-job	HS	63.8	10.7	5.6	47-2171 ⁴
7	VL	30,180	H	VH	L	Moderate-term on-the-job	HS	64.6	12.1	3.2	47-2181
9	L	34,560	H	H	VL	Moderate-term on-the-job	HS/SC	68.7	29.5	1.8	47-2211
3	VL	40,660	H	VH	VL	Long-term on-the-job	HS/SC	70.9	27.8	1.3	47-2221
24	-	-	-	-	-	-	-	-	-	-	47-3000
24	-	-	-	-	-	-	-	-	-	-	47-3010
3	VL	24,390	L	VH	L	Short-term on-the-job	HS	82.3	14.0	3.7	47-3011 ⁴
5	VL	21,510	L	VH	L	Short-term on-the-job	HS	81.2	12.8	6.1	47-3012
6	VL	23,090	L	VH	L	Short-term on-the-job	HS	81.2	12.8	6.1	47-3013
2	VL	20,100	L	VH	L	Short-term on-the-job	HS	81.2	12.8	6.1	47-3014 ⁵
4	VL	22,230	L	VH	L	Short-term on-the-job	HS	80.8	13.8	5.4	47-3015 ³
1	VL	20,480	L	VH	L	Short-term on-the-job	HS	81.2	12.8	6.1	47-3016 ⁵
3	VL	20,230	L	VH	L	Short-term on-the-job	HS	82.3	14.0	3.7	47-3019 ⁴
12	-	-	-	-	-	-	-	-	-	-	47-4000
3	VL	41,620	H	L	VL	Work experience in a related occupation	HS/SC/C	35.6	41.9	22.4	47-4011 ²
1	VL	54,070	VH	VL	VL	Long-term on-the-job	HS/SC	68.4	31.3	3	47-4021 ²
1	VL	22,160	L	VH	VL	Moderate-term on-the-job	HS	75.5	17.5	7.0	47-4031
3	VL	32,460	H	VH	VL	Moderate-term on-the-job	HS	74.3	18.0	7.7	47-4041
4	VL	28,390	H	H	VL	Moderate-term on-the-job	HS/SC	74.9	23.2	1.9	47-4051
0	VL	35,160	H	VH	VL	Moderate-term on-the-job	HS/SC	61.5	28.9	9.6	47-4061 ⁸
1	VL	27,940	H	VL	VL	Moderate-term on-the-job	HS/SC	66.2	26.5	5.3	47-4071 ⁴
0	-	-	-	-	-	-	-	-	-	-	47-4090
0	VL	26,940	L	VH	L	Moderate-term on-the-job	HS	81.0	11.4	7.6	47-4091 ⁵
5	VL	22,900	L	VH	L	Moderate-term on-the-job	HS	81.0	11.4	7.6	47-4999
5	-	-	-	-	-	-	-	-	-	-	47-5000
1	-	-	-	-	-	-	-	-	-	-	47-5010
0	VL	29,820	H	VH	VL	Moderate-term on-the-job	HS	69.5	18.1	12.4	47-5011 ^{2,6}
0	VL	33,750	H	VH	VL	Moderate-term on-the-job	HS	69.5	18.1	12.4	47-5012 ^{2,6}
0	VL	28,670	H	VH	VL	Moderate-term on-the-job	HS	69.5	18.1	12.4	47-5013 ^{2,6}
1	VL	32,490	H	H	VL	Moderate-term on-the-job	HS/SC	78.4	20.5	1.2	47-5021 ²
0	VL	35,110	H	H	VL	Moderate-term on-the-job	HS	76.6	19.5	3.8	47-5031 ^{2,8}
1	-	-	-	-	-	-	-	-	-	-	47-5040
0	VL	34,850	H	H	VL	Moderate-term on-the-job	HS/SC	70.7	25.7	3.5	47-5041 ^{2,3}
0	VL	37,590	H	H	VL	Moderate-term on-the-job	HS/SC	72.4	24.3	3.3	47-5042 ^{2,4}
0	VL	38,780	H	H	VL	Moderate-term on-the-job	HS/SC	71.0	24.8	4.2	47-5049 ^{2,5}
0	VL	26,170	L	VH	VL	Moderate-term on-the-job	HS	84.0	12.8	3.3	47-5051 ⁵
0	VL	38,430	H	L	VL	Moderate-term on-the-job	HS	76.6	19.5	3.8	47-5061 ^{2,8}
1	VL	22,280	L	H	VL	Moderate-term on-the-job	HS	76.6	19.5	3.8	47-5071 ^{2,8}
1	VL	25,200	L	VH	L	Short-term on-the-job	HS	76.6	19.5	3.8	47-5081 ^{2,8}
0	VL	29,110	H	VH	VL	Moderate-term on-the-job	HS	83.2	14.4	2.4	47-5099 ³
209	-	-	-	-	-	-	-	-	-	-	49-0000
18	-	-	-	-	-	-	-	-	-	-	49-1000
18	L	47,580	VH	VL	VL	Work experience in a related occupation	HS/SC	47.7	40.2	12.1	49-1011

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
49-2000	Electrical and electronic equipment mechanics, installers, and repairers	689	746	57	-	8.3	-	7.3	80	-
49-2011	Computer, automated teller, and office machine repairers	156	180	24	L	15.0	H	12.2	20	VL
49-2020	Radio and telecommunications equipment installers and repairers	226	222	-4	-	-1.6	-	4.6	23	-
49-2021	Radio mechanics ⁵	7	5	-2	VL	-29.3	VL	4.4	1	VL
49-2022	Telecommunications equipment installers and repairers, except line installers	219	217	-1	VL	-.6	VL	4.6	23	VL
49-2090	Miscellaneous electrical and electronic equipment mechanics, installers, and repairers	264	317	33	-	11.5	-	7.2	34	-
49-2091	Avionics technicians ⁶	23	24	1	VL	3.4	VL	1.5	3	VL
49-2092	Electric motor, power tool, and related repairers	31	33	2	VL	5.3	VL	5.7	4	VL
49-2093	Electrical and electronics installers and repairers, transportation equipment ⁶	18	19	1	VL	7.1	VL	.0	2	VL
49-2094	Electrical and electronics repairers, commercial and industrial equipment ⁶	85	94	9	VL	10.4	L	.7	10	VL
49-2095	Electrical and electronics repairers, powerhouse, substation, and relay ⁶	21	21	0	VL	-.6	VL	.7	2	VL
49-2096	Electronic equipment installers and repairers, motor vehicles	18	21	3	VL	14.8	H	15.8	2	VL
49-2097	Electronic home entertainment equipment installers and repairers	43	46	4	VL	8.6	VL	27.5	6	VL
49-2098	Security and fire alarm systems installers	46	60	14	VL	30.2	VH	6.8	6	VL
49-2099	All other electrical and electronic equipment mechanics, installers, and repairers	22	26	4	VL	19.6	H	.0	3	VL
49-3000	Vehicle and mobile equipment mechanics, installers, and repairers	1,817	2,043	226	-	12.4	-	10.0	233	-
49-3011	Aircraft mechanics and service technicians ²	131	145	14	VL	11.0	L	1.0	12	VL
49-3020	Automotive technicians and repairers	1,036	1,168	130	-	12.5	-	14.6	134	-
49-3021	Automotive body and related repairers	198	225	26	L	13.2	L	11.3	25	VL
49-3022	Automotive glass installers and repairers	22	24	2	VL	10.7	L	9.2	3	VL
49-3023	Automotive service technicians and mechanics	818	919	101	H	12.4	L	15.5	106	L
49-3031	Bus and truck mechanics and diesel engine specialists	267	305	38	L	14.2	L	3.9	30	VL
49-3040	Heavy vehicle and mobile equipment service technicians and mechanics	176	191	15	-	8.8	-	4.5	18	-
49-3041	Farm equipment mechanics	35	38	3	VL	7.7	VL	4.9	3	VL
49-3042	Mobile heavy equipment mechanics, except engines	126	138	12	VL	9.6	L	4.4	13	VL
49-3043	Rail car repairers ³	15	15	1	VL	4.5	VL	3.7	1	VL
49-3050	Small engine mechanics	67	79	12	-	18.7	-	14.8	6	-
49-3051	Motorboat mechanics ^{2,3}	22	26	4	VL	18.3	H	14.1	2	VL
49-3052	Motorcycle mechanics ^{2,4}	15	18	3	VL	18.7	H	14.5	1	VL
49-3053	Outdoor power equipment and other small engine mechanics ²	30	36	6	VL	18.9	H	15.5	3	VL
49-3090	Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers ²	102	113	11	-	10.4	-	1.3	29	-
49-3091	Bicycle repairers ⁵	7	8	1	VL	18.8	H	1.4	2	VL
49-3092	Recreational vehicle service technicians ⁵	13	15	3	VL	21.8	VH	1.2	4	VL
49-3093	Tire repairers and changers	83	89	7	VL	8.0	VL	1.4	23	VL
49-3099	All other vehicle and mobile equipment mechanics, installers, and repairers	36	41	6	VL	15.4	H	.0	5	VL
49-9000	Other installation, maintenance, and repair occupations	2,746	3,171	424	-	15.5	-	4.8	358	-
49-9010	Control and valve installers and repairers	49	55	7	-	14.2	-	.7	7	-
49-9011	Mechanical door repairers ⁵	11	13	2	VL	21.8	VH	.7	2	VL
49-9012	Control and valve installers and repairers, except mechanical door ³	38	42	5	VL	12.0	L	.7	5	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
19	-	-	-	-	-	-	-	-	-	-	49-2000
4	VL	33,250	H	L	L	Postsecondary vocational award	HS/SC/C	27.6	50.3	22.0	49-2011
5	-	-	-	-	-	-	-	-	-	-	49-2020
0	VL	36,230	H	L	VL	Postsecondary vocational award	HS/SC	40.8	48.2	11.0	49-2021 ⁵
5	VL	47,380	VH	L	VL	Long-term on-the-job	HS/SC	40.8	48.2	11.0	49-2022
9	-	-	-	-	-	-	-	-	-	-	49-2090
1	VL	42,030	VH	VH	VL	Postsecondary vocational award	HS/SC	49.4	44.1	6.5	49-2091 ⁶
1	VL	32,210	H	VL	L	Postsecondary vocational award	HS/SC	49.4	43.7	6.9	49-2092
1	VL	38,610	H	H	VL	Postsecondary vocational award	HS/SC	49.4	44.1	6.5	49-2093 ⁶
3	VL	41,110	H	VL	VL	Postsecondary vocational award	HS/SC	31.5	63.4	5.1	49-2094 ⁶
0	VL	51,690	VH	VL	VL	Postsecondary vocational award	HS/SC	31.5	63.4	5.1	49-2095 ⁶
1	VL	26,010	L	VL	VL	Postsecondary vocational award	HS/SC	37.9	59.6	2.5	49-2096
1	VL	27,200	L	H	L	Postsecondary vocational award	HS/SC	59.4	33.4	7.1	49-2097
2	VL	32,370	H	L	VL	Postsecondary vocational award	HS/SC	49.0	44.8	6.2	49-2098
1	VL	35,160	H	VL	VL	Postsecondary vocational award	HS/SC	40.8	48.2	11.0	49-2099
70	-	-	-	-	-	-	-	-	-	-	49-3000
5	VL	43,070	VH	L	VL	Postsecondary vocational award	HS/3C	36.1	52.7	11.2	49-3011 ²
39	-	-	-	-	-	-	-	-	-	-	49-3020
7	VL	32,680	H	L	VL	Long-term on-the-job	HS/SC	73.7	21.8	4.5	49-3021
1	VL	26,890	L	H	L	Long-term on-the-job	HS	77.6	12.7	9.7	49-3022
32	H	30,590	H	L	VL	Postsecondary vocational award	HS/SC	66.8	30.0	3.2	49-3023
11	L	34,380	H	L	VL	Postsecondary vocational award	HS/SC	66.0	30.6	3.4	49-3031
5	-	-	-	-	-	-	-	-	-	-	49-3040
1	VL	27,100	L	L	VL	Postsecondary vocational award	HS/SC	63.2	31.1	5.7	49-3041
4	VL	35,970	H	L	VL	Postsecondary vocational award	HS/SC	63.2	31.1	5.7	49-3042
0	VL	39,060	H	L	VL	Long-term on-the-job	HS/SC	65.8	29.5	4.7	49-3043 ³
3	-	-	-	-	-	-	-	-	-	-	49-3050
1	VL	29,050	H	H	VL	Long-term on-the-job	HS/SC	62.9	34.7	2.4	49-3051 ^{2,3}
1	VL	27,100	L	H	VL	Long-term on-the-job	HS/SC	63.9	34.0	2.1	49-3052 ^{2,4}
1	VL	24,820	L	H	VL	Moderate-term on-the-job	HS/SC	59.6	39.6	.7	49-3053 ²
5	-	-	-	-	-	-	-	-	-	-	49-3090 ²
0	VL	19,230	VL	VH	L	Moderate-term on-the-job	HS	87.9	9.8	2.3	49-3091 ⁵
1	VL	27,080	L	VH	L	Long-term on-the-job	HS	87.9	9.8	2.3	49-3092 ⁵
4	VL	20,160	L	VH	L	Short-term on-the-job	HS	87.9	9.8	2.3	49-3093
2	VL	35,840	H	VH	L	Moderate-term on-the-job	HS/SC	66.8	30.0	3.2	49-3099
102	-	-	-	-	-	-	-	-	-	-	49-9000
2	-	-	-	-	-	-	-	-	-	-	49-9010
1	VL	29,190	H	VL	VL	Moderate-term on-the-job	HS/SC	59.2	30.0	10.8	49-9011 ⁵
1	VL	43,460	VH	VL	VL	Moderate-term on-the-job	HS/SC	55.9	34.2	9.9	49-9012 ³

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
49-9021	Heating, air conditioning, and refrigeration mechanics and installers	249	328	79	L	31.8	VH	15.4	39	L
49-9031	Home appliance repairers	42	44	2	VL	5.5	VL	16.7	5	VL
49-9040	Industrial machinery installation, repair, and maintenance workers	1,628	1,855	227	-	13.9	-	1.5	198	-
49-9041	Industrial machinery mechanics	197	208	11	VL	5.5	VL	6.3	20	VL
49-9042	Maintenance and repair workers, general	1,266	1,472	207	H	16.3	H	.9	166	H
49-9043	Maintenance workers, machinery	92	97	5	VL	5.9	VL	.0	5	VL
49-9044	Millwrights	69	73	4	VL	5.3	VL	1.5	7	VL
49-9045	Refractory materials repairers, except brickmasons ⁵	4	4	0	VL	5.6	VL	6.1	0	VL
49-9050	Line installers and repairers	268	301	33	-	12.3	-	3.5	24	-
49-9051	Electrical power-line installers and repairers	101	103	2	VL	1.6	VL	3.1	9	VL
49-9052	Telecommunications line installers and repairers	167	199	31	L	18.8	H	3.7	14	VL
49-9060	Precision instrument and equipment repairers	64	69	6	-	8.6	-	22.4	8	-
49-9061	Camera and photographic equipment repairers ⁵	7	6	0	VL	-7.2	VL	24.1	1	VL
49-9062	Medical equipment repairers	29	33	4	VL	14.8	H	23.2	4	VL
49-9063	Musical instrument repairers and tuners ⁵	6	7	0	VL	6.3	VL	21.9	1	VL
49-9064	Watch repairers ⁵	5	5	0	VL	3.5	VL	22.8	1	VL
49-9069	All other precision instrument and equipment repairers ³	17	18	1	VL	7.0	VL	20.3	2	VL
49-9090	Miscellaneous installation, maintenance, and repair workers	447	518	71	-	15.8	-	8.1	77	-
49-9091	Coin, vending, and amusement machine servicers and repairers	43	49	6	VL	15.2	H	17.0	7	VL
49-9092	Commercial divers ^{2,6}	4	5	0	VL	10.6	L	34.6	1	VL
49-9093	Fabric menders, except garment ⁵	2	2	0	VL	-2.2	VL	10.0	0	VL
49-9094	Locksmiths and safe repairers ²	23	28	5	VL	21.0	H	16.8	3	VL
49-9095	Manufactured building and mobile home installers	18	22	4	VL	23.4	VH	24.2	2	VL
49-9096	Riggers ⁶	14	16	2	VL	14.3	L	.0	3	VL
49-9097	Signal and track switch repairers ⁶	8	8	0	VL	-3.0	VL	.0	1	VL
49-9098	Helpers—installation, maintenance, and repair workers ^{2,3}	150	181	30	L	20.3	H	.0	36	L
49-9099	Installation, maintenance, and repair workers, all other	185	207	23	L	12.2	L	10.4	23	VL
51-0000	Production occupations	11,258	11,612	354	-	3.2	-	3.0	1,529	-
51-1000	Supervisors, production workers	733	803	70	-	9.5	-	2.2	68	-
51-1011	First-line supervisors/managers of production and operating workers	733	803	70	L	9.5	L	2.2	68	L
51-2000	Assemblers and fabricators	2,122	2,044	-77	-	-3.6	-	.9	234	-
51-2011	Aircraft structure, surfaces, rigging, and systems assemblers ⁶	27	24	-2	VL	-9.4	VL	.0	2	VL
51-2020	Electrical, electronics, and electromechanical assemblers	377	316	-61	-	-16.3	-	.3	24	-
51-2021	Coil winders, tapers, and finishers	36	31	-5	VL	-13.9	VL	.3	2	VL
51-2022	Electrical and electronic equipment assemblers	281	230	-51	VL	-18.3	VL	.3	17	VL
51-2023	Electromechanical equipment assemblers	60	55	-5	VL	-8.3	VL	.3	4	VL
51-2031	Engine and other machine assemblers ³	50	49	-1	VL	-1.9	VL	.0	3	VL
51-2041	Structural metal fabricators and fitters	89	94	6	VL	6.2	VL	.3	15	VL
51-2090	Miscellaneous assemblers and fabricators	1,579	1,561	-18	-	-1.1	-	1.1	191	-
51-2091	Fiberglass laminators and fabricators	37	39	2	VI	5.6	VL	1.2	5	VL
51-2092	Team assemblers	1,174	1,155	-19	VL	-1.6	VL	1.1	141	H
51-2093	Timing device assemblers, adjusters, and calibrators ⁵	7	6	0	VL	-3.0	VL	1.4	1	VL
51-2099	All other assemblers and fabricators	361	360	-1	VL	-2	VL	1.1	44	L

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002—Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	College or higher	
11	L	34,900	H	L	VL	Long-term on-the-job	HS/SC	59.6	36.8	3.6	49-9021
1	VL	30,390	H	VL	L	Long-term on-the-job	HS/SC	69.9	25.4	4.7	49-9031
55	-	-	-	-	-	-	-	-	-	-	49-9040
5	VL	37,980	H	L	VL	Long-term on-the-job	HS/SC	60.4	34.3	5.3	49-9041
45	H	29,370	H	VL	VL	Moderate-term on-the-job	HS/SC	56.7	34.8	8.5	49-9042
3	VL	32,520	H	L	VL	Short-term on-the-job	HS/SC	72.6	25.3	2.2	49-9043
2	VL	41,990	VH	VH	VL	Long-term on-the-job	HS/SC	60.2	39.3	.5	49-9044
0	VL	35,100	H	L	VL	Moderate-term on-the-job	HS/SC	60.4	34.3	5.3	49-9045 ⁵
11	-	-	-	-	-	-	-	-	-	-	49-9050
3	VL	48,530	VH	H	VL	Long-term on-the-job	HS/SC	61.1	34.6	4.3	49-9051
8	L	39,640	H	H	VL	Long-term on-the-job	HS/SC	48.1	46.5	5.3	49-9052
2	-	-	-	-	-	-	-	-	-	-	49-9060
0	VL	31,390	H	VL	L	Moderate-term on-the-job	HS/SC	36.0	49.0	15.0	49-9061 ⁵
1	VL	36,380	H	VL	L	Associate degree	HS/SC	36.0	49.0	15.0	49-9062
0	VL	29,440	H	VL	L	Long-term on-the-job	HS/SC	36.0	49.0	15.0	49-9063 ⁵
0	VL	26,560	L	VL	L	Long-term on-the-job	HS/SC	36.0	49.0	15.0	49-9064 ⁵
1	VL	44,090	VH	VL	L	Long-term on-the-job	HS/SC	38.6	43.4	18.0	49-9069 ³
19	-	-	-	-	-	-	-	-	-	-	49-9090
2	VL	27,380	L	H	H	Moderate-term on-the-job	HS/SC	62.6	32.3	5.1	49-9091
0	VL	34,710	H	L	L	Moderate-term on-the-job	HS/SC	63.2	28.2	8.6	49-9092 ^{2,8}
0	VL	25,890	L	L	L	Moderate-term on-the-job	HS/SC	62.3	25.6	12.1	49-9093 ⁵
1	VL	28,430	H	VL	L	Moderate-term on-the-job	HS/SC	70.7	25.2	4.1	49-9094 ²
1	VL	23,170	L	H	VL	Moderate-term on-the-job	HS	73.7	18.5	7.8	49-9095
1	VL	33,790	H	H	VL	Short-term on-the-job	HS/SC	63.2	28.2	8.6	49-9096 ⁸
0	VL	43,370	VH	VL	VL	Moderate-term on-the-job	HS/SC	63.2	28.2	8.6	49-9097 ⁶
8	L	21,440	L	VH	H	Short-term on-the-job	HS	83.6	15.5	.9	49-9098 ^{2,3}
6	VL	33,010	H	L	L	Moderate-term on-the-job	HS/SC	62.3	25.6	12.1	49-9099
336	-	-	-	-	-	-	-	-	-	-	51-0000
22	-	-	-	-	-	-	-	-	-	-	51-1000
22	L	42,930	VH	L	VL	Work experience in a related occupation	HS/SC	58.7	28.8	12.5	51-1011
55	-	-	-	-	-	-	-	-	-	-	51-2000
1	VL	38,910	H	H	VL	Long-term on-the-job	HS/SC	74.7	20.4	4.9	51-2011 ⁸
9	-	-	-	-	-	-	-	-	-	-	51-2020
1	VL	23,020	L	VH	VL	Short-term on-the-job	HS/SC	72.6	21.6	5.8	51-2021
7	VL	22,940	L	VH	VL	Short-term on-the-job	HS/SC	72.6	21.6	5.8	51-2022
1	VL	25,260	L	VH	VL	Short-term on-the-job	HS/SC	72.6	21.6	5.8	51-2023
1	VL	29,170	H	VH	VL	Short-term on-the-job	HS/SC	70.5	26.0	3.5	51-2031 ³
3	VL	28,620	H	VH	VL	Moderate-term on-the-job	HS/SC	79.3	20.7	-	51-2041
41	-	-	-	-	-	-	-	-	-	-	51-2090
1	VL	24,610	L	VH	VL	Moderate-term on-the-job	HS/SC	73.8	21.2	5.0	51-2091
30	H	22,680	L	VH	VL	Moderate-term on-the-job	HS/SC	73.8	21.2	5.0	51-2092
0	VL	24,190	L	VH	VL	Moderate-term on-the-job	HS/SC	73.8	21.2	5.0	51-2093 ⁵
9	L	22,890	L	VH	VL	Moderate-term on-the-job	HS/SC	73.8	21.2	5.0	51-2099

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
51-3000	Food processing occupations	757	836	79	-	10.5	-	2.5	132	-
51-3011	Bakers	173	192	19	VL	11.2	L	6.4	30	VL
51-3020	Butchers and other meat, poultry, and fish processing workers	414	459	45	-	10.9	-	1.1	74	-
51-3021	Butchers and meat cutters	132	129	-3	VL	-2.5	VL	1.1	21	VL
51-3022	Meat, poultry, and fish cutters and trimmers	154	179	25	L	16.4	H	1.1	29	VL
51-3023	Slaughtering and meat packers	128	151	23	L	16.2	H	1.0	24	VL
51-3090	Miscellaneous food processing workers	127	137	9	-	7.2	-	2.6	20	-
51-3091	Food and tobacco roasting, baking, and drying machine operators and tenders ⁸	19	20	1	VL	4.2	VL	3.7	3	VL
51-3092	Food batchmakers ²	74	79	5	VL	7.2	VL	3.4	11	VL
51-3093	Food cooking machine operators and tenders ⁴	34	37	3	VL	8.8	L	.3	6	VL
51-3099	All other food processing workers	42	48	6	VL	13.4	L	.0	8	VL
51-4000	Metal workers and plastic workers	2,367	2,544	177	-	7.5	-	2.0	273	-
51-4010	Computer control programmers and operators	151	166	15	-	9.8	-	.0	13	-
51-4011	Computer-controlled machine tool operators, metal and plastic	132	144	12	VL	9.3	L	.0	11	VL
51-4012	Numerical tool and process control programmers ⁵	19	22	3	VL	13.0	L	.0	2	VL
51-4020	Forming machine setters, operators, and tenders, metal and plastic	188	198	11	-	5.6	-	.6	21	-
51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic ²	98	105	7	VL	7.1	VL	.0	14	VL
51-4022	Forging machine setters, operators, and tenders, metal and plastic ^{2,3}	45	48	3	VL	6.0	VL	.0	3	VL
51-4023	Rolling machine setters, operators, and tenders, metal and plastic ³	44	45	1	VL	2.0	VL	2.4	3	VL
51-4030	Machine tool cutting setters, operators, and tenders, metal and plastic	546	569	24	-	4.3	-	.5	61	-
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	283	302	19	VL	6.8	VL	.0	38	L
51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic ^{2,3}	53	54	1	VL	2.1	VL	.0	5	VL
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	104	106	3	VL	2.4	VL	1.8	9	VL
51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic	75	75	1	VL	8	VL	1.0	7	VL
51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic ⁶	31	31	0	VL	.8	VL	.0	2	VL
51-4041	Machinists	387	419	32	L	8.2	VL	2.7	31	VL
51-4050	Metal furnace and kiln operators and tenders	31	30	0	-	-1.3	-	.0	4	-
51-4051	Metal-refining furnace operators and tenders ²	18	17	0	VL	-.8	VL	.0	2	VL
51-4052	Pourers and casters, metal ^{2,3}	13	13	0	VL	-2.0	VL	.0	2	VL
51-4060	Model makers and patternmakers, metal and plastic	15	16	1	-	9.8	-	.0	1	-
51-4061	Model makers, metal and plastic ⁶	9	10	1	VL	14.6	L	.0	1	VL
51-4062	Patternmakers, metal and plastic ⁶	6	7	0	VL	3.6	VL	.0	0	VL
51-4070	Molders and molding machine setters, operators, and tenders, metal and plastic	174	189	14	-	8.2	-	1.1	21	-
51-4071	Foundry mold and coremakers ³	23	24	1	VL	3.6	VL	1.2	3	VL
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	151	165	14	VL	8.9	L	1.1	19	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002—Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	College or higher	
25	—	—	—	—	—	—	—	—	—	—	51-3000
6	VL	20,580	L	H	H	Long-term on-the-job	HS/SC	73.5	20.5	6.0	51-3011
14	—	—	—	—	—	—	—	—	—	—	51-3020
3	VL	25,500	L	H	L	Long-term on-the-job	HS	81.2	16.2	2.6	51-3021
6	VL	17,820	VL	H	L	Short-term on-the-job	HS	81.2	16.2	2.6	51-3022
5	VL	20,370	L	H	L	Moderate-term on-the-job	HS	81.2	16.2	2.6	51-3023
4	—	—	—	—	—	—	—	—	—	—	51-3090
1	VL	23,260	L	VH	H	Short-term on-the-job	HS	76.9	18.9	4.2	51-3091 ⁸
2	VL	21,920	L	H	H	Short-term on-the-job	HS	77.1	18.4	4.5	51-3092 ²
1	VL	21,860	L	H	H	Short-term on-the-job	HS	81.7	14.0	4.4	51-3093 ⁴
1	VL	19,410	VL	H	H	Short-term on-the-job	HS	81.2	16.2	2.6	51-3099
75	—	—	—	—	—	—	—	—	—	—	51-4000
4	—	—	—	—	—	—	—	—	—	—	51-4010
3	VL	29,050	H	VH	VL	Moderate-term on-the-job	HS/SC	58.5	36.5	5.0	51-4011
1	VL	37,520	H	VH	VL	Long-term on-the-job	HS/SC	58.5	36.5	5.0	51-4012 ⁵
6	—	—	—	—	—	—	—	—	—	—	51-4020
4	VL	25,870	L	H	VL	Moderate-term on-the-job	HS/SC	76.3	23.6	.1	51-4021 ²
1	VL	26,300	L	H	VL	Moderate-term on-the-job	HS/SC	76.6	23.4	—	51-4022 ^{2,3}
1	VL	28,330	H	VH	VL	Moderate-term on-the-job	HS	75.7	18.1	6.2	51-4023 ³
14	—	—	—	—	—	—	—	—	—	—	51-4030
8	L	24,570	L	VH	VL	Moderate-term on-the-job	HS/SC	72.4	26.1	1.5	51-4031
2	VL	27,530	H	VH	VL	Moderate-term on-the-job	HS/SC	72.9	23.1	4.0	51-4032 ^{2,3}
2	VL	26,120	L	VH	VL	Moderate-term on-the-job	HS	82.5	13.8	3.6	51-4033
1	VL	30,270	H	VH	VL	Moderate-term on-the-job	HS/SC	77.4	20.9	1.7	51-4034
1	VL	29,210	H	VH	L	Moderate-term on-the-job	HS	78.4	19.0	2.6	51-4035 ⁸
12	L	32,570	H	H	VL	Long-term on-the-job	HS/SC	63.9	32.4	3.7	51-4041
1	—	—	—	—	—	—	—	—	—	—	51-4050
0	VL	30,770	H	H	VL	Moderate-term on-the-job	HS	77.9	18.2	3.9	51-4051 ²
0	VL	27,880	H	H	VL	Moderate-term on-the-job	HS	78.5	15.5	6.0	51-4052 ^{2,3}
1	—	—	—	—	—	—	—	—	—	—	51-4060
0	VL	38,000	H	L	VL	Moderate-term on-the-job	HS/SC	59.0	38.5	2.4	51-4061 ⁶
0	VL	33,470	H	L	VL	Moderate-term on-the-job	HS/SC	59.0	38.5	2.4	51-4062 ⁶
6	—	—	—	—	—	—	—	—	—	—	51-4070
1	VL	26,100	L	VH	VL	Moderate-term on-the-job	HS/SC	74.9	21.5	3.5	51-4071 ³
5	VL	23,230	L	VH	VL	Moderate-term on-the-job	HS/SC	71.4	25.7	2.9	51-4072

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Percent self-employed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic ²	99	107	8	VL	8.3	VL	.0	8	VL
51-4111	Tool and die makers	109	110	0	VL	.4	VL	1.7	3	VL
51-4120	Welding, soldering, and brazing workers	452	518	67	=	14.8	=	5.6	87	=
51-4121	Welders, cutters, solderers, and brazers	391	457	66	L	17.0	H	5.6	76	L
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders	61	62	1	VL	.9	VL	5.7	10	VL
51-4190	Miscellaneous metalworkers and plastic workers	215	221	6	=	2.8	=	1.8	23	=
51-4191	Heat treating equipment setters, operators, and tenders, metal and plastic ^{2,3}	29	29	0	VL	-.6	VL	.0	4	VL
51-4192	Lay-out workers, metal and plastic ⁴	13	15	2	VL	15.6	H	.0	1	VL
51-4193	Plating and coating machine setters, operators, and tenders, metal and plastic ²	44	42	-1	VL	-2.6	VL	2.4	6	VL
51-4194	Tool grinders, filers, and sharpeners ^{2,3}	26	24	-2	VL	-7.7	VL	10.9	2	VL
51-4199	All other metal workers and plastic workers	104	111	7	VL	6.6	VL	.0	11	VL
51-5000	Printing occupations	465	466	1	=	.3	=	2.7	53	=
51-5010	Bookbinders and bindery workers	96	93	-3	=	-4.8	=	.7	6	=
51-5011	Bindery workers ²	91	86	-5	VL	-5.2	VL	.7	6	VL
51-5012	Bookbinders ^{2,3}	7	7	0	VL	1.3	VL	.7	0	VL
51-5020	Printers	346	350	4	=	1.2	=	3.5	43	=
51-5021	Job printers	56	61	5	VL	9.2	L	10.8	7	VL
51-5022	Prepress technicians and workers	91	81	-10	VL	-11.2	VL	.8	5	VL
51-5023	Printing machine operators	199	208	9	VL	4.6	VL	2.7	31	VL
51-5099	All other printing workers	21	23	2	VL	9.3	L	.0	3	VL
51-6000	Textile, apparel, and furnishings occupations	1,085	932	-152	=	-14.1	=	9.8	160	=
51-6011	Laundry and dry-cleaning workers	231	260	29	L	12.3	L	6.8	50	L
51-6021	Pressers, textile, garment, and related materials	91	91	0	VL	-.2	VL	.9	19	VL
51-6031	Sewing machine operators	315	218	-99	VL	-31.5	VL	7.4	33	L
51-6040	Shoe and leather workers	23	18	-4	=	-19.0	=	27.1	3	=
51-6041	Shoe and leather workers and repairers ^{2,3}	16	14	-3	VL	-16.1	VL	38.1	2	VL
51-6042	Shoe machine operators and tenders ^{2,3}	7	5	-2	VL	-26.1	VL	.0	1	VL
51-6050	Tailors, dressmakers, and sewers	90	77	-13	=	-14.0	=	43.6	14	=
51-6051	Sewers, hand	36	29	-8	VL	-21.2	VL	44.7	5	VL
51-6052	Tailors, dressmakers, and custom sewers	53	48	-5	VL	-9.1	VL	42.9	8	VL
51-6060	Textile machine setters, operators, and tenders	179	124	-56	=	-31.0	=	1.5	19	=
51-6061	Textile bleaching and dyeing machine operators and tenders ²	27	19	-8	VL	-28.7	VL	.0	3	VL
51-6062	Textile cutting machine setters, operators, and tenders ³	34	26	-8	VL	-22.6	VL	.0	3	VL
51-6063	Textile knitting and weaving machine setters, operators, and tenders ²	53	33	-20	VL	-38.6	VL	3.2	5	VL
51-6064	Textile winding, twisting, and drawing out machine setters, operators, and tenders ²	66	46	-20	VL	-30.3	VL	1.4	8	VL
51-6090	Miscellaneous textile, apparel, and furnishings workers	156	147	-9	=	-5.9	=	11.8	22	=
51-6091	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers ^{2,3}	27	24	-4	VL	-13.1	VL	.0	4	VL
51-6092	Fabric and apparel patternmakers ^{2,3}	11	8	-3	VL	-24.6	VL	.0	1	VL
51-6093	Upholsterers ²	56	51	-5	VL	-8.7	VL	26.3	8	VL
51-6099	All other textile, apparel, and furnishings workers	61	63	2	VL	3.3	VL	5.6	9	VL
51-7000	Woodworkers	374	393	19	=	5.1	=	10.4	47	=
51-7011	Cabinetmakers and bench carpenters	147	160	14	VL	9.4	L	13.0	16	VL
51-7021	Furniture finishers ²	39	41	1	VL	3.3	VL	22.1	4	VL
51-7030	Model makers and patternmakers, wood	9	10	1	=	11.0	=	.0	1	=
51-7031	Model makers, wood ^{2,3}	4	5	0	VL	10.3	L	.0	0	VL

See footnotes at end of table.

Table B-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁸	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	College or higher	
4	VL	26,690	H	VL	VL	Moderate-term on-the-job	HS/SC	72.3	24.3	3.3	51-4061 ⁸
3	VL	42,730	VH	H	VL	Long-term on-the-job	HS/SC	47.5	47.3	5.2	51-4111
19	-	-	-	-	-	-	-	-	-	-	51-4120
18	L	29,160	H	VH	VL	Long-term on-the-job	HS/SC	74.6	23.2	2.2	51-4121
2	VL	26,900	H	VH	VL	Moderate-term on-the-job	HS/SC	74.6	23.2	2.2	51-4122
6	-	-	-	-	-	-	-	-	-	-	51-4190
1	VL	26,200	H	L	VL	Moderate-term on-the-job	HS	76.6	16.5	2.9	51-4191 ^{2,3}
0	VL	30,760	H	H	VL	Moderate-term on-the-job	HS/SC	76.3	20.0	3.7	51-4192 ⁸
1	VL	25,420	L	H	VL	Moderate-term on-the-job	HS	66.4	7.4	6.3	51-4193 ²
1	VL	29,400	H	L	VL	Moderate-term on-the-job	HS/SC	66.4	22.5	9.1	51-4194 ^{2,3}
3	VL	26,400	H	H	VL	Moderate-term on-the-job	HS/SC	75.7	21.5	2.7	51-4199
13	-	-	-	-	-	-	-	-	-	-	51-5000
3	-	-	-	-	-	-	-	-	-	-	51-5010
2	VL	21,660	L	H	L	Short-term on-the-job	HS/SC	70.4	21.5	8.1	51-5011 ²
0	VL	27,660	H	H	L	Moderate-term on-the-job	HS/SC	70.4	21.5	8.1	51-5012 ^{2,5}
9	-	-	-	-	-	-	-	-	-	-	51-5020
2	VL	30,100	H	H	VL	Long-term on-the-job	HS/SC	66.5	27.0	6.5	51-5021
2	VL	31,150	H	H	L	Long-term on-the-job	HS/SC	57.1	30.0	12.9	51-5022
6	VL	29,010	H	L	VL	Moderate-term on-the-job	HS/SC	70.6	25.3	4.1	51-5023
1	VL	23,330	L	H	L	Moderate-term on-the-job	HS/SC	70.6	25.3	4.1	51-5099
24	-	-	-	-	-	-	-	-	-	-	51-6000
9	L	16,780	VL	H	H	Moderate-term on-the-job	HS	62.4	13.6	4.0	51-6011
1	VL	17,070	VL	VH	H	Short-term on-the-job	HS	69.8	8.4	1.8	51-6021
4	VL	17,440	VL	VH	L	Moderate-term on-the-job	HS	66.7	10.2	3.1	51-6031
1	-	-	-	-	-	-	-	-	-	-	51-6040
1	VL	19,010	VL	L	L	Long-term on-the-job	HS/SC	70.2	20.3	9.5	51-6041 ^{2,3}
0	VL	20,600	L	H	VL	Moderate-term on-the-job	HS	63.7	10.4	6.0	51-6042 ^{2,5}
2	-	-	-	-	-	-	-	-	-	-	51-6050
1	VL	18,070	VL	H	H	Short-term on-the-job	HS/SC	63.1	24.2	12.7	51-6051
1	VL	22,220	L	H	H	Long-term on-the-job	HS/SC	63.1	24.2	12.7	51-6052
3	-	-	-	-	-	-	-	-	-	-	51-6060
1	VL	20,800	L	VH	VL	Moderate-term on-the-job	HS	66.5	9.8	1.7	51-6061 ⁸
1	VL	20,320	L	VH	L	Moderate-term on-the-job	HS	60.7	8.5	.8	51-6062 ³
1	VL	22,970	L	VH	L	Long-term on-the-job	HS	69.3	7.9	2.8	51-6063 ²
1	VL	21,920	L	VH	VL	Moderate-term on-the-job	HS	67.9	11.7	.4	51-6064 ²
4	-	-	-	-	-	-	-	-	-	-	51-6090
1	VL	27,500	H	VH	VL	Moderate-term on-the-job	HS	60.3	14.5	5.2	51-6091 ^{2,8}
1	VL	26,360	L	VL	VL	Long-term on-the-job	HS	60.3	14.5	5.2	51-6092 ^{2,8}
1	VL	24,670	L	L	L	Long-term on-the-job	HS	60.1	19.9	-	51-6093 ²
2	VL	18,740	VL	H	L	Short-term on-the-job	HS	66.2	10.5	3.4	51-6099
12	-	-	-	-	-	-	-	-	-	-	51-7000
5	VL	24,000	L	L	VL	Long-term on-the-job	HS/SC	69.0	23.3	7.7	51-7011
1	VL	22,710	L	H	L	Long-term on-the-job	HS	76.3	17.2	6.5	51-7021 ²
0	-	-	-	-	-	-	-	-	-	-	51-7030
0	VL	24,740	L	H	L	Long-term on-the-job	HS	70.2	19.4	10.4	51-7031 ^{2,8}

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
51-7032	Patternmakers, wood ^{2,8}	4	5	0	VL	11.8	L	.0	0	VL
51-7040	Woodworking machine setters, operators, and tenders	151	153	3	-	1.8	-	2.8	24	-
51-7041	Sawing machine setters, operators, and tenders, wood	56	56	0	VL	-.2	VL	2.2	10	VL
51-7042	Woodworking machine setters, operators, and tenders, except sawing	95	98	3	VL	3.0	VL	3.1	14	VL
51-7099	All other woodworkers ²	29	29	0	VL	1.7	VL	24.5	3	VL
51-8000	Plant and system operators	346	353	7	-	2.0	-	.7	27	-
51-8010	Power plant operators, distributors, and dispatchers	51	51	0	-	-.7	-	.0	4	-
51-8011	Nuclear power reactor operators ^{2,5}	3	3	0	VL	-3.2	VL	.0	0	VL
51-8012	Power distributors and dispatchers ^{2,4}	12	12	0	VL	-3.0	VL	.0	1	VL
51-8013	Power plant operators ²	35	36	0	VL	.3	VL	.0	3	VL
51-8021	Stationary engineers and boiler operators	55	56	0	VL	.3	VL	2.2	4	VL
51-8031	Water and liquid waste treatment plant and system operators ²	99	115	16	VL	16.0	H	.0	9	VL
51-8090	Miscellaneous plant and system operators	141	132	-9	-	-6.2	-	.9	10	-
51-8091	Chemical plant and system operators ²	58	51	-7	VL	-12.3	VL	.9	4	VL
51-8092	Gas plant operators ^{2,5}	12	13	1	VL	6.7	VL	.9	1	VL
51-8093	Petroleum pump system operators, refinery operators, and gaugers ^{2,3}	39	35	-4	VL	-11.0	VL	.8	3	VL
51-8099	All other plant and system operators ^{2,3}	32	33	2	VL	5.6	VL	.9	3	VL
51-9000	Other production occupations	3,010	3,240	230	-	7.6	-	2.5	535	-
51-9010	Chemical processing machine setters, operators, and tenders	94	92	-2	-	-2.0	-	.9	13	-
51-9011	Chemical equipment operators and tenders ²	58	56	-2	VL	-3.8	VL	.8	8	VL
51-9012	Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders ²	36	36	0	VL	.8	VL	.9	5	VL
51-9020	Crushing, grinding, polishing, mixing, and blending workers	196	192	-4	-	-2.1	-	1.1	26	-
51-9021	Crushing, grinding, and polishing machine setters, operators, and tenders	45	44	-.1	VL	-2.8	VL	1.1	6	VL
51-9022	Grinding and polishing workers, hand	45	49	4	VL	9.0	L	1.1	7	VL
51-9023	Mixing and blending machine setters, operators, and tenders	106	99	-7	VL	-6.5	VL	1.2	14	VL
51-9030	Cutting workers	109	116	7	-	6.9	-	.9	17	-
51-9031	Cutters and trimmers, hand	31	33	2	VL	7.6	VL	.9	5	VL
51-9032	Cutting and slicing machine setters, operators, and tenders	77	83	5	VL	6.6	VL	.9	12	VL
51-9041	Extruding, forming, pressing, and compacting machine setters, operators, and tenders	73	73	0	VL	-.1	VL	1.1	10	VL
51-9051	Furnace, kiln, oven, drier, and kettle operators and tenders	31	29	-2	VL	-4.9	VL	1.7	4	VL
51-9061	Inspectors, testers, sorters, samplers, and weighers	515	539	24	L	4.7	VL	1.2	89	L
51-9071	Jewelers and precious stone and metal workers ²	40	42	2	VL	4.5	VL	25.5	3	VL
51-9080	Medical, dental, and ophthalmic laboratory technicians	94	101	7	-	7.4	-	8.4	6	-
51-9081	Dental laboratory technicians	47	49	2	VL	3.6	VL	13.0	3	VL
51-9082	Medical appliance technicians ³	14	16	2	VL	16.1	H	13.0	1	VL
51-9083	Ophthalmic laboratory technicians	33	36	3	VL	9.2	L	.0	2	VL
51-9111	Packaging and filling machine operators and tenders	387	468	82	H	21.2	H	.0	76	L
51-9120	Painting workers	187	211	24	-	13.0	-	8.0	34	-
51-9121	Coating, painting, and spraying machine setters, operators, and tenders	103	112	10	VL	9.4	L	8.0	18	VL
51-9122	Painters, transportation equipment	50	59	9	VL	17.5	H	7.8	9	VL
51-9123	Painting, coating, and decorating workers	34	40	6	VL	17.6	H	8.2	6	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
0	VL	29,780	H	H	L	Long-term on-the-job	HS	70.2	19.4	10.4	51-7032 ^{2,8}
4	-	-	-	-	-	-	-	-	-	-	51-7040
2	VL	22,080	L	VH	VL	Moderate-term on-the-job	HS	86.1	13.5	.4	51-7041
3	VL	22,030	L	H	L	Moderate-term on-the-job	HS/SC/C	66.5	11.5	22.0	51-7042
1	VL	21,020	L	H	L	Moderate-term on-the-job	HS/SC/C	56.9	22.7	20.4	51-7099 ²
12	-	-	-	-	-	-	-	-	-	-	51-8000
1	-	-	-	-	-	-	-	-	-	-	51-8010
0	VL	61,060	VH	VL	VL	Long-term on-the-job	HS/SC	49.8	38.0	12.2	51-8011 ^{2,5}
0	VL	54,120	VH	VL	VL	Long-term on-the-job	HS/SC	47.1	40.5	12.4	51-8012 ^{2,4}
1	VL	49,920	VH	VL	VL	Long-term on-the-job	HS/SC	49.8	38.0	12.2	51-8013 ²
1	VL	43,240	VH	VL	VL	Long-term on-the-job	HS/SC	53.7	35.4	11.0	51-8021
5	VL	33,390	H	VL	VL	Long-term on-the-job	HS/SC	48.7	43.8	7.5	51-8031 ²
5	-	-	-	-	-	-	-	-	-	-	51-8090
2	VL	43,940	VH	VL	VL	Long-term on-the-job	HS/SC	54.6	39.0	6.4	51-8091 ²
0	VL	48,340	VH	VL	VL	Long-term on-the-job	HS/SC	54.6	39.0	6.4	51-8092 ^{2,5}
1	VL	49,280	VH	VL	VL	Long-term on-the-job	HS/SC	57.6	37.5	4.9	51-8093 ^{2,3}
1	VL	36,660	H	VL	VL	Long-term on-the-job	HS/SC	57.6	37.5	4.9	51-8099 ^{2,3}
98	-	-	-	-	-	-	-	-	-	-	51-9000
3	-	-	-	-	-	-	-	-	-	-	51-9010
2	VL	37,430	H	L	VL	Moderate-term on-the-job	HS/SC	46.2	36.4	17.5	51-9011 ²
1	VL	30,340	H	L	VL	Moderate-term on-the-job	HS/SC	46.2	36.4	17.5	51-9012 ²
6	-	-	-	-	-	-	-	-	-	-	51-9020
1	VL	26,690	L	H	VL	Moderate-term on-the-job	HS/SC	67.9	28.6	3.6	51-9021
2	VL	22,970	L	H	VL	Moderate-term on-the-job	HS/SC	67.9	28.6	3.6	51-9022
3	VL	27,530	H	H	VL	Moderate-term on-the-job	HS/SC	67.9	28.6	3.6	51-9023
3	-	-	-	-	-	-	-	-	-	-	51-9030
1	VL	22,020	L	H	VL	Short-term on-the-job	HS	81.1	17.0	1.9	51-9031
2	VL	25,690	L	H	VL	Moderate-term on-the-job	HS	81.1	17.0	1.9	51-9032
2	VL	26,540	L	VH	VL	Moderate-term on-the-job	HS/SC	69.5	26.0	4.5	51-9041
1	VL	28,210	H	L	VL	Moderate-term on-the-job	HS/SC	71.2	23.0	5.7	51-9051
14	L	27,060	L	H	VL	Moderate-term on-the-job	HS/SC	52.9	33.7	13.4	51-9061
1	VL	26,260	L	L	L	Postsecondary vocational award	HS/SC	61.5	24.8	13.7	51-9071 ²
3	-	-	-	-	-	-	-	-	-	-	51-9080
1	VL	28,500	H	L	L	Long-term on-the-job	HS/SC	51.8	34.6	13.6	51-9081
1	VL	27,680	H	L	L	Long-term on-the-job	HS/SC	50.4	34.2	15.4	51-9082 ³
1	VL	21,760	L	L	L	Moderate-term on-the-job	HS/SC	51.8	34.6	13.6	51-9083
16	L	21,210	L	VH	VL	Short-term on-the-job	HS	81.7	15.5	2.8	51-9111
7	-	-	-	-	-	-	-	-	-	-	51-9120
4	VL	25,290	L	VH	VL	Moderate-term on-the-job	HS/SC	76.7	20.8	2.5	51-9121
2	VL	33,550	H	VH	VL	Moderate-term on-the-job	HS/SC	76.7	20.8	2.5	51-9122
1	VL	21,200	L	VH	VL	Short-term on-the-job	HS/SC	76.7	20.8	2.5	51-9123

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
51-9130	Photographic process workers and processing machine operators	82	89	6	=	7.9	=	4.3	14	=
51-9131	Photographic process workers	28	30	2	VL	5.4	VL	4.0	5	VL
51-9132	Photographic processing machine operators ...	54	59	5	VL	9.2	L	4.5	9	VL
51-9141	Semiconductor processors ⁸	46	42	-5	VL	-10.6	VL	.0	4	VL
51-9190	Miscellaneous production workers	1,155	1,245	90	=	7.8	=	2.3	242	=
51-9191	Cementing and gluing machine operators and tenders ²	27	28	0	VL	1.0	VL	.0	4	VL
51-9192	Cleaning, washing, and metal pickling equipment operators and tenders ³	18	19	1	VL	6.9	VL	.0	3	VL
51-9193	Cooling and freezing equipment operators and tenders ⁸	7	8	1	VL	7.1	VL	.0	1	VL
51-9194	Etchers and engravers ^{2,3}	10	10	1	VL	6.2	VL	4.6	1	VL
51-9195	Molders, shapers, and casters, except metal and plastic	46	49	3	VL	6.4	VL	19.2	6	VL
51-9196	Paper goods machine setters, operators, and tenders	117	114	-3	VL	-2.8	VL	.2	15	VL
51-9197	Tire builders	14	15	1	VL	6.6	VL	4.8	2	VL
51-9198	Helpers—production workers	467	503	36	L	7.7	VL	.2	139	H
51-9199	All other production workers	449	500	51	L	11.3	L	3.4	71	L
53-0000	Transportation and material moving occupations ..	9,828	11,111	1,282	=	13.0	=	4.4	2,000	=
53-1000	Supervisors, transportation and material moving workers	364	411	47	=	12.9	=	.2	42	=
53-1011	Aircraft cargo handling supervisors ⁵	9	10	1	VL	15.6	H	.2	1	VL
53-1021	First-line supervisors/managers of helpers, laborers, and material movers, hand	147	168	21	L	14.0	L	.2	17	VL
53-1031	First-line supervisors/managers of transportation and material-moving machine and vehicle operators	207	232	25	L	12.0	L	.2	24	VL
53-2000	Air transportation occupations	144	168	24	=	17.0	=	1.6	13	=
53-2010	Aircraft pilots and flight engineers	100	118	18	=	17.8	=	2.4	8	=
53-2011	Airline pilots, copilots, and flight engineers ²	79	94	15	VL	18.5	H	.0	7	VL
53-2012	Commercial pilots ²	21	24	3	VL	14.9	H	11.2	2	VL
53-2020	Air traffic controllers and airfield operations specialists	32	36	4	=	13.5	=	.0	3	=
53-2021	Air traffic controllers ²	26	29	3	VL	12.6	L	.0	2	VL
53-2022	Airfield operations specialists ^{2,5}	6	7	1	VL	17.2	H	.0	1	VL
53-2099	All other air transportation workers	12	14	2	VL	19.4	H	.0	1	VL
53-3000	Motor vehicle operators	4,136	4,896	760	=	18.4	=	8.5	808	=
53-3011	Ambulance drivers and attendants, except emergency medical technicians ⁸	17	22	5	VL	26.7	VH	.0	4	VL
53-3020	Bus drivers	654	761	106	=	16.2	=	.7	117	=
53-3021	Bus drivers, transit and intercity	202	233	31	L	15.2	H	.7	36	L
53-3022	Bus drivers, school	453	528	76	L	16.7	H	.7	81	L
53-3030	Driver/sales workers and truck drivers	3,221	3,813	592	=	18.4	=	10.5	634	=
53-3031	Driver/sales workers	431	450	19	VL	4.3	VL	13.2	68	L
53-3032	Truck drivers, heavy and tractor-trailer	1,767	2,104	337	VH	19.0	H	13.1	324	VH
53-3033	Truck drivers, light or delivery services	1,022	1,259	237	VH	23.2	VH	4.7	241	H
53-3041	Taxi drivers and chauffeurs	132	161	29	L	21.7	VH	4.8	31	VL
53-3099	All other motor vehicle operators ³	111	139	28	L	25.2	VH	3.6	22	VL
53-4000	Rail transportation occupations	101	96	-5	=	-5.4	=	.3	13	=
53-4010	Locomotive engineers and operators ²	33	31	-2	VL	-7.2	VL	.0	4	VL
53-4021	Railroad brake, signal, and switch operators ^{2,8}	15	12	-3	VL	-22.8	VL	1.7	2	VL
53-4031	Railroad conductors and yardmasters ²	38	36	-2	VL	-4.2	VL	.0	5	VL
53-4039	Subway, streetcar operators and all other rail transportation workers ⁸	15	17	2	VL	13.2	L	.0	2	VL
53-5000	Water transportation occupations	68	70	2	=	3.4	=	2.1	8	=
53-5011	Sailors and marine oilers ^{2,3}	27	28	1	VL	4.0	VL	.0	3	VL

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
3	-	-	-	-	-	-	-	-	-	-	51-9130
1	VL	20,220	L	H	H	Moderate-term on-the-job	HS/SC/C	41.6	32.8	25.5	51-9131
2	VL	18,820	VL	H	H	Short-term on-the-job	HS/SC/C	41.6	32.8	25.5	51-9132
1	VL	27,340	L	H	VL	Associate degree	HS/SC	68.7	23.9	7.5	51-9141 ⁶
39	-	-	-	-	-	-	-	-	-	-	51-9190
1	VL	23,190	L	H	VL	Moderate-term on-the-job	HS	82.7	17.3	-	51-9191 ²
1	VL	22,850	L	VH	VL	Moderate-term on-the-job	HS	88.0	6.9	3.1	51-9192 ³
0	VL	21,240	L	VL	VL	Moderate-term on-the-job	HS	75.3	19.9	4.8	51-9193 ⁶
0	VL	22,450	L	H	H	Long-term on-the-job	HS/SC	63.1	25.3	11.6	51-9194 ^{2,3}
1	VL	24,700	L	VH	L	Moderate-term on-the-job	HS	64.6	17.3	18.1	51-9195
2	VL	28,280	H	H	VL	Moderate-term on-the-job	HS/SC	75.0	22.8	2.2	51-9196
0	VL	38,840	H	H	VL	Moderate-term on-the-job	HS/SC	49.9	44.2	6.0	51-9197
17	L	19,240	VL	VH	H	Short-term on-the-job	HS	77.3	17.3	5.4	51-9198
16	L	22,260	L	VH	VL	Moderate-term on-the-job	HS/SC	74.3	21.0	4.7	51-9199
350	-	-	-	-	-	-	-	-	-	-	53-0000
13	-	-	-	-	-	-	-	-	-	-	53-1000
0	VL	37,220	H	L	L	Work experience in a related occupation	HS/SC	50.0	36.5	13.5	53-1011 ⁵
6	VL	37,180	H	L	L	Work experience in a related occupation	HS/SC	50.0	36.5	13.5	53-1021
7	VL	42,910	VH	L	L	Work experience in a related occupation	HS/SC	50.0	36.5	13.5	53-1031
6	-	-	-	-	-	-	-	-	-	-	53-2000
4	-	-	-	-	-	-	-	-	-	-	53-2010
4	VL	109,580	VH	L	L	Bachelor's degree	C	5.0	18.9	76.1	53-2011 ²
1	VL	47,970	VH	L	L	Postsecondary vocational award	C	5.0	18.9	76.1	53-2012 ²
1	-	-	-	-	-	-	-	-	-	-	53-2020
1	VL	91,600	VH	VL	VL	Long-term on-the-job	SC/C	17.3	33.6	49.1	53-2021 ²
0	VL	36,010	H	VL	VL	Long-term on-the-job	SC/C	17.3	33.6	49.1	53-2022 ^{2,5}
1	VL	23,330	L	VL	VL	Moderate-term on-the-job	HS/SC	50.0	36.5	13.5	53-2099
138	-	-	-	-	-	-	-	-	-	-	53-3000
1	VL	19,100	VL	L	VL	Moderate-term on-the-job	HS/SC	69.5	24.9	5.6	53-3011 ⁶
25	-	-	-	-	-	-	-	-	-	-	53-3020
7	L	29,580	H	L	VH	Moderate-term on-the-job	HS/SC	63.9	29.2	7.0	53-3021
17	L	22,390	L	L	VH	Short-term on-the-job	HS/SC	63.9	29.2	7.0	53-3022
105	-	-	-	-	-	-	-	-	-	-	53-3030
9	L	20,640	L	H	L	Short-term on-the-job	HS/SC	70.9	24.2	4.9	53-3031
63	VH	33,210	H	H	L	Moderate-term on-the-job	HS/SC	70.9	24.2	4.9	53-3032
33	H	23,870	L	H	H	Short-term on-the-job	HS/SC	60.9	25.9	13.2	53-3033
4	VL	18,530	VL	H	H	Short-term on-the-job	HS/SC	60.9	25.9	13.2	53-3041
4	VL	18,820	VL	VH	VH	Short-term on-the-job	HS	73.0	16.8	10.2	53-3099 ³
3	-	-	-	-	-	-	-	-	-	-	53-4000
1	VL	45,450	VH	VL	VL	Work experience in a related occupation	HS/SC	46.8	47.3	5.9	53-4010 ²
0	VL	43,520	VH	VL	VL	Work experience in a related occupation	HS/SC	50.9	37.6	11.6	53-4021 ^{2,6}
1	VL	44,490	VH	VL	VL	Work experience in a related occupation	HS/SC	46.8	42.4	10.9	53-4031 ²
1	VL	44,680	VH	L	L	Work experience in a related occupation	HS/SC	50.9	37.6	11.6	53-4039 ⁶
2	-	-	-	-	-	-	-	-	-	-	53-5000
1	VL	28,370	H	VH	VL	Short-term on-the-job	HS/SC	69.8	24.8	5.4	53-5011 ^{2,3}

See footnotes at end of table.

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

2002 national employment matrix occupation		Employment		Employment change, 2002-12				Per- cent self- em- ployed, 2002	Annual average job openings due to growth and total replacement needs, 2002-12	
		2002	2012	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
53-5020	Ship and boat captains and operators	29	30	1	-	2.4	-	5.0	4	-
53-5021	Captains, mates, and pilots of water vessels ² ..	25	26	1	VL	2.4	VL	5.0	3	VL
53-5022	Motorboat operators ^{2,5}	4	4	0	VL	2.7	VL	4.7	1	VL
53-5031	Ship engineers ⁶	8	9	0	VL	4.5	VL	.0	1	VL
53-5099	All other water transportation workers	4	4	0	VL	5.6	VL	0	0	VL
53-6000	Other transportation workers	294	326	32	-	11.0	-	1.4	57	-
53-6011	Bridge and lock tenders ⁶	4	3	-1	VL	-17.4	VL	.0	0	VL
53-6021	Parking lot attendants ²	107	128	21	L	19.2	H	.4	20	VL
53-6031	Service station attendants	107	111	4	VL	3.3	VL	3.2	24	VL
53-6041	Traffic technicians ⁵	6	6	1	VL	9.3	L	0	1	VL
53-6051	Transportation inspectors	29	32	2	VL	7.7	VL	.4	5	VL
53-6099	All other related transportation workers ³	40	47	6	VL	15.2	H	0	7	VL
53-7000	Material moving occupations	4,722	5,144	422	-	8.9	-	1.4	1,059	-
53-7011	Conveyor operators and tenders ⁶	58	65	7	VL	12.4	L	0	9	VL
53-7021	Crane and tower operators	50	55	5	VL	10.8	L	1.9	5	VL
53-7030	Dredge, excavating, and loading machine operators	87	94	7	-	7.5	-	16.9	16	-
53-7031	Dredge operators ^{2,5}	3	3	0	VL	.3	VL	16.6	1	VL
53-7032	Excavating and loading machine and dragline operators ²	80	87	7	VL	8.9	L	16.9	15	VL
53-7033	Loading machine operators, underground mining ^{2,5}	4	3	-1	VL	-14.1	VL	16.5	1	VL
53-7041	Hoist and winch operators ^{2,4}	9	10	1	VL	13.0	L	.6	1	VL
53-7051	Industrial truck and tractor operators	594	659	66	L	11.1	L	1	98	L
53-7060	Laborers and material movers, hand	3,659	3,967	308	-	8.4	-	1.3	861	-
53-7061	Cleaners of vehicles and equipment	344	374	30	L	8.7	L	8.3	77	L
53-7062	Laborers and freight, stock, and material movers, hand	2,231	2,378	147	H	6.6	VL	.8	541	VH
53-7063	Machine feeders and offbearers	164	162	-2	VL	-1.4	VL	0	31	VL
53-7064	Packers and packagers, hand	920	1,052	132	H	14.4	L	.1	211	H
53-7070	Pumping station operators	32	30	-2	-	-6.0	-	5.8	4	-
53-7071	Gas compressor and gas pumping station operators ⁶	7	7	0	VL	1.0	VL	5.4	1	VL
53-7072	Pump operators, except wellhead pumpers ⁶	13	13	-1	VL	-5.0	VL	6.3	2	VL
53-7073	Wellhead pumpers ⁶	11	10	-1	VL	-11.7	VL	5.5	1	VL
53-7081	Refuse and recyclable material collectors ²	134	158	24	L	17.6	H	1.8	45	L
53-7111	Shuttle car operators ⁶	3	2	-1	VL	-31.3	VL	.0	1	VL
53-7121	Tank car, truck, and ship loaders ⁶	17	17	0	VL	-2.1	VL	.0	3	VL
53-7199	Material moving workers, all other	78	86	8	VL	10.0	L	.1	16	VL

Table III-1. Occupational employment and job openings data, 2002-12, and worker characteristics, 2002-Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2002-12		2002 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training ⁹	Educational attainment cluster ¹¹	Percent of workers aged 25 to 44, by educational attainment			2002 national employment matrix occupation code
		Dollars	Rank					High school or less	Some college	College or higher	
Number	Rank										
1	-	-	-	-	-	-	-	-	-	-	53-5020
0	VL	49,850	VH	H	VL	Work experience in a related occupation	HS	72.4	13.6	13.9	53-5021 ²
1	VL	26,440	L	H	VL	Moderate-term on-the-job	HS	72.4	13.6	13.9	53-5022 ^{2,5}
0	VL	51,190	VH	VH	VL	Postsecondary vocational award	HS/SC	59.5	26.6	13.9	53-5031 ⁶
0	VL	30,520	H	H	VL	Short-term on-the-job	HS/SC	50.0	36.5	13.5	53-5099
14	-	-	-	-	-	-	-	-	-	-	53-6000
0	VL	35,310	H	VH	L	Short-term on-the-job	HS/SC	62.8	30.3	6.9	53-6011 ⁶
5	VL	16,320	VL	VH	VH	Short-term on-the-job	HS	70.3	19.4	10.3	53-6021 ²
5	VL	16,570	VL	VH	H	Short-term on-the-job	HS/SC	67.8	26.4	5.9	53-6031
0	VL	31,650	H	H	L	Short-term on-the-job	HS/SC	36.7	54.9	8.4	53-6041 ⁵
1	VL	48,450	VH	L	VL	Work experience in a related occupation	HS/SC	39.7	45.9	14.4	53-6051
2	VL	26,600	L	H	L	Short-term on-the-job	HS/SC	44.5	49.2	6.3	53-6099 ³
173	-	-	-	-	-	-	-	-	-	-	53-7000
2	VL	24,250	L	VL	VL	Short-term on-the-job	HS	77.0	19.5	3.5	53-7011 ⁶
2	VL	36,330	H	VH	VL	Moderate-term on-the-job	HS	87.4	10.9	1.7	53-7021
3	-	-	-	-	-	-	-	-	-	-	53-7030
0	VL	27,730	H	L	VL	Moderate-term on-the-job	HS	83.9	15.5	.7	53-7031 ^{2,5}
3	VL	32,410	H	L	VL	Moderate-term on-the-job	HS	83.9	15.5	.7	53-7032 ²
0	VL	31,930	H	L	VL	Moderate-term on-the-job	HS	83.9	15.5	.7	53-7033 ^{2,5}
0	VL	31,400	H	VH	VL	Moderate-term on-the-job	HS	78.1	19.4	2.5	53-7041 ^{2,4}
18	L	26,070	L	VH	VL	Short-term on-the-job	HS	78.8	17.9	3.3	53-7051
138	-	-	-	-	-	-	-	-	-	-	53-7060
15	L	17,060	VL	VH	H	Short-term on-the-job	HS	78.1	17.4	4.5	53-7061
88	VH	19,710	L	VH	H	Short-term on-the-job	HS/SC	73.8	21.7	4.5	53-7062
4	VL	21,840	L	VH	L	Short-term on-the-job	HS	81.0	15.7	3.3	53-7063
30	H	16,700	VL	VH	H	Short-term on-the-job	HS	83.3	12.6	4.1	53-7064
1	-	-	-	-	-	-	-	-	-	-	53-7070
0	VL	42,510	VH	VL	VL	Moderate-term on-the-job	HS/SC	52.2	38.8	9.0	53-7071 ⁶
0	VL	36,470	H	VL	VL	Moderate-term on-the-job	HS/SC	52.2	38.8	9.0	53-7072 ⁶
0	VL	33,770	H	VL	VL	Moderate-term on-the-job	HS/SC	52.2	38.8	9.0	53-7073 ⁶
6	VL	24,130	L	H	L	Short-term on-the-job	HS	79.0	14.6	6.4	53-7081 ²
0	VL	38,360	H	VH	L	Short-term on-the-job	HS	77.0	19.5	3.5	53-7111 ⁶
0	VL	32,500	H	H	VL	Moderate-term on-the-job	HS	77.0	19.5	3.5	53-7121 ⁶
3	VL	25,070	L	H	L	Moderate-term on-the-job	HS/SC	73.7	22.3	4.1	53-7199

¹ CPS earnings data are used for this occupation.² One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.³ Employment of the 25-44 age group was less than 10,000; employment for the 25-and-older age group was used instead.⁴ Employment of the 25-and-older age group was less than 10,000; employment for the 16-and-older age group was used instead.⁵ Employment was less than 10,000; employment for the 25-and-older age group was used instead.⁶ CPS-based employment of the 25-44 age group was less than 10,000; employment for the 25-and-older age group was used instead.⁷ CPS-based employment of the 25-and-older age group was less than 10,000; employment for the 16-and-older age group was used instead.⁸ CPS-based employment was less than 10,000; CPS-based summary employment was used instead.⁹ An occupation is placed into one of 11 categories that best describes the postsecondary education or training needed by most workers to become fully qualified in the occupation.¹⁰ Bachelor's or higher degree, plus work experience.¹¹ The job types are presented in the following categories: HS = high school occupations, HS/SC = high school/some college occupations, SC = some college occupations, HS/SC/C = high school/some college/college occupations, SC/C = some college/college occupations, and C = college occupations.NOTE: Rankings are based on employment in all detailed occupations in the National Employment Matrix. For details, see "Data presented" section of text. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, and VL = Very low. A dash indicates data are not applicable. Quartile ranking data ranges are available at <http://www.bls.gov/emp/empqrnk.htm>.

Table III-2. Employment for occupations not presented in the national employment matrix, 2002

(Numbers in thousands)

2002 national employment matrix occupation code and title		Occupation type	2002 employment
15-2090	Miscellaneous mathematical science occupations	Rollup	7
15-2091	Mathematical technicians	Collapse	2
15-2099	Mathematical scientists, all other	Collapse	5
25-1000	Postsecondary teachers	Rollup	1,581
25-1011	Business teachers, postsecondary	Collapse	84
25-1021	Computer science teachers, postsecondary	Collapse	40
25-1022	Mathematical science teachers, postsecondary	Collapse	50
25-1031	Architecture teachers, postsecondary	Collapse	7
25-1032	Engineering teachers, postsecondary	Collapse	37
25-1041	Agricultural sciences teachers, postsecondary	Collapse	14
25-1042	Biological science teachers, postsecondary	Collapse	59
25-1043	Forestry and conservation science teachers, postsecondary	Collapse	3
25-1051	Atmospheric, earth, marine, and space sciences teachers, postsecondary	Collapse	10
25-1052	Chemistry teachers, postsecondary	Collapse	22
25-1053	Environmental science teachers, postsecondary	Collapse	5
25-1054	Physics teachers, postsecondary	Collapse	15
25-1061	Anthropology and archeology teachers, postsecondary	Collapse	6
25-1062	Area, ethnic, and cultural studies teachers, postsecondary	Collapse	8
25-1063	Economics teachers, postsecondary	Collapse	15
25-1064	Geography teachers, postsecondary	Collapse	5
25-1065	Political science teachers, postsecondary	Collapse	15
25-1066	Psychology teachers, postsecondary	Collapse	33
25-1067	Sociology teachers, postsecondary	Collapse	17
25-1071	Health specialties teachers, postsecondary	Collapse	127
25-1072	Nursing instructors and teachers, postsecondary	Collapse	43
25-1081	Education teachers, postsecondary	Collapse	54
25-1082	Library science teachers, postsecondary	Collapse	5
25-1111	Criminal justice and law enforcement teachers, postsecondary	Collapse	10
25-1112	Law teachers, postsecondary	Collapse	13
25-1113	Social work teachers, postsecondary	Collapse	8
25-1121	Art, drama, and music teachers, postsecondary	Collapse	72
25-1122	Communications teachers, postsecondary	Collapse	25
25-1123	English language and literature teachers, postsecondary	Collapse	67
25-1124	Foreign language and literature teachers, postsecondary	Collapse	25
25-1125	History teachers, postsecondary	Collapse	22
25-1126	Philosophy and religion teachers, postsecondary	Collapse	20
25-1191	Graduate teaching assistants	Collapse	159
25-1192	Home economics teachers, postsecondary	Collapse	5
25-1193	Recreation and fitness studies teachers, postsecondary	Collapse	18
25-1194	Vocational education teachers, postsecondary	Collapse	133
25-1198	All other postsecondary teachers	Collapse	330
25-2040	Special education teachers	Rollup	433
25-2041	Special education teachers, preschool, kindergarten, and elementary school	Collapse	210
25-2042	Special education teachers, middle school	Collapse	88
25-2043	Special education teachers, secondary school	Collapse	134
29-1060	Physicians and surgeons	Rollup	583
29-1061	Anesthesiologists	Collapse	29
29-1062	Family and general practitioners	Collapse	143
29-1063	Internists, general	Collapse	60
29-1064	Obstetricians and gynecologists	Collapse	23
29-1065	Pediatricians, general	Collapse	32
29-1066	Psychiatrists	Collapse	24
29-1067	Surgeons	Collapse	61
29-1069	Physicians and surgeons, all other	Collapse	210
33-2020	Fire inspectors	Rollup	14
33-2021	Fire inspectors and investigators	Collapse	13
33-2022	Forest fire inspectors and prevention specialists	Collapse	2
45-1000	Supervisors, farming, fishing, and forestry workers	Rollup	52
45-1011	First-line supervisors/managers of farming, fishing, and forestry workers	Collapse	51
45-1012	Farm labor contractors	Collapse	1
53-4010	Locomotive engineers and operators	Rollup	33
53-4011	Locomotive engineers	Collapse	28
53-4012	Locomotive fire's	Collapse	1
53-4013	Rail yard engineers, dinkey operators, and hostlers	Collapse	5
53-4039	Subway, streetcar operators and all other rail transportation workers	Rollup	15
53-4041	Subway and streetcar operators	Collapse	7
53-4099	Rail transportation workers, all other	Collapse	8

Chapter IV. Factors Affecting Industry Employment and Occupational Utilization, 2002–12

Occupational employment may change over time, for several reasons. For example, an occupation's employment could increase because of growing demand for goods and services produced by industries in which the employment is concentrated. Alternatively, increases in the utilization of an occupation in those industries could boost the occupation's overall employment. This chapter presents information about both categories of factors—those affecting industry employment and those affecting occupational utilization within industries—that drive changes in occupational employment.

Industry employment

Many assumptions underlie the Bureau of Labor Statistics (BLS) projections of the aggregate economy and of industry output, productivity, and employment. Often, these assumptions bear specifically on macroeconomic factors, such as the aggregate unemployment rate, the anticipated time path of labor productivity, and expectations regarding the Federal budget surplus or deficit. Other assumptions deal with factors that affect industry-specific measures of economic activity.

Detailed industry employment projections are based largely on time-series models, which, by their very nature, project future economic behavior on the basis of a continuation of economic relationships that held in the past. For the most part, the determinants of industry employment are expressed both in the structure of the models' equations and as adjustments imposed on the specific equations to ensure that the models are indeed making a smooth transition from actual historical data to projected results. However, one of the most important steps associated with the preparation of the BLS projections is a detailed review of the results by analysts who have studied recent economic trends in specific industries. In some cases, the results of the aggregate and industry models are modified because of the analysts' judgment that historical relationships need to be redefined in some manner.

As discussed in Chapter II, the 2002–12 projections were the first to incorporate the 2002 North American Industry Classification System (NAICS). Table IV-1 presents historical and projected information about employment and output for aggregate and detailed industries. Industry sector employment projections prepared in the Division of Industry Employment Projections (DIEP) used a comprehensive modeling technique that estimates output as well as

employment. More detailed industry employment projections produced using historical time series information are included in the matrix and are consistent with their parent industry sector, however projections of output were not developed for these industries. Specific factors that underlie the projections of industry employment for DIEP sectors are presented in table IV-2 to allow the user to better understand the rationale behind projected changes in industry employment and output.

Occupational utilization

BLS projections of wage and salary employment are developed within the framework of an industry-occupation matrix, which shows the occupational distribution in an industry. Historical data indicate that the occupational distribution of industries changes over time as the utilization of some occupations changes relative to that of other occupations.

Among the various factors that can affect the utilization of workers in an occupation in particular industries are several kinds of changes: in technology, business practices, the mix of goods and services produced, and the size of business establishments. BLS staff analyze each occupation in the matrix to identify the factors that are likely to cause an increase or decrease in utilization of the occupation within a particular industry in the future. The analyses incorporate judgments about new trends that may influence occupational utilization, such as the use of the Internet or electronic commerce. Table IV-3 contains brief descriptions of the factors underlying changes in occupational utilization within industries projected to occur between 2002 and 2012. Occupations appear in alphabetical order. Although all detailed occupations were analyzed, utilization for many occupations was projected to remain unchanged. These occupations are not included in the table. In addition, factors are discussed for only the most significant industries—those with the highest share of an occupation's employment.

In developing the projections, BLS staff made hundreds of analytical decisions of the kind set forth in the preceding paragraph. To maintain consistency among analysts, guidelines for changing distributions were established as follows: small change = ± 10 percent; moderate change = ± 20 percent; large change = ± 35 percent; very large change = ± 50 percent.

Table IV-1. Employment and output by industry, 1992, 2002, and projected 2012

Industry title and North American Industry Classification System code	Employment							Output				
	Thousands of jobs			Change		Average annual rate of change		Billions of chained 1996 dollars			Average annual rate of change	
	1992	2002	2012	1992-2002	2002-2012	1992-2002	2002-2012	1992	2002	2012	1992-2002	2002-2012
Nonagriculture wage and salary¹	109,526	131,063	152,690	21,537	21,627	1.8	1.5	11,448	15,818	21,973	3.3	3.3
Mining (21)	610	512	451	-98	-61	-1.7	-1.3	155	166	156	.7	-.6
Oil and gas extraction (211)	182	123	88	-60	-34	-3.9	-3.2	94	87	80	-.7	-.9
Mining (except oil and gas) (212)	272	212	180	-60	-32	-2.5	-1.6	47	54	52	1.4	-.5
Coal mining (2121)	118	75	52	-43	-23	-4.4	-3.5	22	26	23	1.8	-1.1
Metal ore mining (2122)	50	29	18	-21	-11	-5.2	-4.8	11	10	11	-.6	.8
Nonmetallic mineral mining and quarrying (2123)	104	108	110	3	2	.3	.2	14	18	17	2.1	-.5
Support activities for mining (213)	156	177	183	22	6	1.3	.3	14	24	26	5.3	.9
Utilities (22)	726	600	565	-126	-34	-1.9	-.6	278	267	320	-.4	1.8
Electric power generation, transmission, and distribution (2211)	537	436	405	-101	-31	-2.1	-.7	207	207	254	0	2.0
Natural gas distribution (2212)	154	116	90	-38	-26	-2.8	-2.5	66	53	58	-2.1	.9
Water, sewage, and other systems (2213)	35	49	71	13	23	3.2	3.9	5	6	8	2.2	2.7
Construction (23)	4,608	6,732	7,745	2,124	1,014	3.9	1.4	547	719	852	2.8	1.7
Construction of buildings (236)	1,187	1,584	1,706	397	123	2.9	.7	-	-	-	-	-
Residential building construction (2361)	551	807	895	257	88	3.9	1.0	-	-	-	-	-
Nonresidential building construction (2362)	637	776	811	140	35	2.0	.4	-	-	-	-	-
Heavy and civil engineering construction (237)	734	930	992	196	62	2.4	.6	-	-	-	-	-
Utility system construction (2371)	284	381	421	96	41	3.0	1.0	-	-	-	-	-
Land subdivision (2372)	81	86	87	5	1	.6	.1	-	-	-	-	-
Highway, street, and bridge construction (2373)	264	344	363	81	19	2.7	.5	-	-	-	-	-
Other heavy and civil engineering construction (2379)	105	119	120	14	1	1.3	.1	-	-	-	-	-
Specialty trade contractors (2380)	2,686	4,218	5,047	1,532	830	4.6	1.8	-	-	-	-	-
Foundation, structure, and building exterior contractors (2381)	607	915	1,078	309	163	4.2	1.7	-	-	-	-	-
Building equipment contractors (2382)	1,179	1,843	2,275	663	433	4.6	2.1	-	-	-	-	-
Building finishing contractors (2383)	554	880	1,011	325	131	4.7	1.4	-	-	-	-	-
Other specialty trade contractors (2389)	346	581	683	235	103	5.3	1.6	-	-	-	-	-
Manufacturing (31-33)	16,799	15,307	15,149	-1,492	-158	-.9	-.1	3,067	3,840	5,361	2.3	3.4
Food manufacturing (311)	1,518	1,525	1,597	7	72	.0	.5	384	437	517	1.3	1.7
Animal food manufacturing (3111)	55	52	52	-4	1	-.7	.1	25	30	38	2.1	2.2
Grain and oilseed milling (3112)	71	62	61	-9	-1	-1.3	-.1	49	57	70	1.6	2.0
Sugar and confectionery product manufacturing (3113)	103	83	80	-20	-3	-2.1	-.3	22	26	30	1.7	1.6
Fruit and vegetable preserving and specialty food manufacturing (3114)	218	182	180	-36	-2	-1.8	-.1	44	50	59	1.4	1.7
Dairy product manufacturing (3115)	143	137	124	-6	-13	-.4	-1.0	57	56	58	-.3	.4
Animal slaughtering and processing (3116)	438	520	601	83	80	1.7	1.4	98	118	144	1.9	2.0
Seafood product preparation and packaging (3117)	55	44	40	-11	-4	-2.3	-.8	8	7	8	-1.2	1.2
Bakeries and tortilla manufacturing (3118)	290	295	303	4	9	.1	.3	39	43	53	1.1	2.0
Other food manufacturing (3119)	146	152	155	5	4	.4	.2	44	51	59	1.5	1.5
Beverage and tobacco product manufacturing (312)	209	206	179	-3	-27	-.1	-1.4	96	98	105	.3	.7
Beverage manufacturing (3121)	165	172	158	7	-14	.4	-.8	59	64	74	.8	1.3
Tobacco manufacturing (3122)	44	33	20	-10	-13	-2.7	-4.8	36	34	33	-.5	-.3
Textile mills (313)	479	293	157	-186	-136	-4.8	-6.1	51	45	36	-1.4	-2.2
Fiber, yarn, and thread mills (3131)	97	64	37	-33	-27	-4.1	-5.3	12	11	8	-1.0	-2.5
Fabric mills (3132)	256	147	80	-109	-67	-5.4	-5.9	26	22	21	-1.7	-.4
Textile and fabric finishing and fabric coating mills (3133)	126	82	40	-44	-42	-4.2	-6.9	13	12	7	-1.0	-6.0
Textile product mills (314)	202	196	181	-6	-16	-.3	-.8	26	30	35	1.4	1.3
Textile furnishings mills (3141)	120	119	111	-1	-8	-.1	-.7	18	21	23	1.8	1.0
Other textile product mills (3149)	82	78	70	-5	-8	-.6	-1.1	9	9	11	.6	2.1
Apparel manufacturing (315)	905	358	112	-548	-246	-8.9	-11.0	64	50	23	-2.4	-7.8
Apparel knitting mills (3151)	110	50	20	-60	-30	-7.7	-8.7	10	6	2	-4.3	-9.7
Cut and sew apparel manufacturing (3152)	752	282	77	-470	-205	-9.4	-12.2	50	40	17	-2.2	-8.1
Apparel accessories and other apparel manufacturing (3159)	43	26	15	-17	-11	-4.8	-5.4	4	4	3	-1.3	-1.5
Leather and allied product manufacturing (316)	121	50	33	-71	-17	-8.5	-4.0	10	8	6	-2.5	-2.6

See footnotes at end of table.

Table IV-1. Employment and output by industry, 1992, 2002, and projected 2012—Continued

Industry title and North American Industry Classification System code	Employment							Output				
	Thousands of jobs			Change		Average annual rate of change		Billions of chained 1996 dollars			Average annual rate of change	
	1992	2002	2012	1992-2002	2002-2012	1992-2002	2002-2012	1992	2002	2012	1992-2002	2002-2012
Leather and hide tanning and finishing (3161)	15	9	5	-7	-4	-5.7	-6.3	3	3	1	-1.5	-7.7
Footwear manufacturing (3162)	72	21	18	-51	-4	-11.5	-1.8	5	3	4	-3.6	2.1
Other leather and allied product manufacturing (3169)	33	20	11	-13	-9	-5.0	-5.9	3	2	1	-1.6	-7.7
Wood product manufacturing (321)	502	557	634	55	77	1.0	1.3	73	83	112	1.2	3.0
Sawmills and wood preservation (3211)	134	121	110	-13	-11	-1.0	-1.0	25	26	34	.6	2.7
Veneer, plywood, and engineered wood product manufacturing (3212)	88	116	138	28	21	2.8	1.7	17	20	26	1.8	2.6
Other wood product manufacturing (3219)	280	320	386	39	67	1.3	1.9	32	37	52	1.5	3.4
Paper manufacturing (322)	640	550	477	-90	-72	-1.5	-1.4	146	141	144	-.4	.2
Pulp, paper, and paperboard mills (3221)	232	168	126	-63	-42	-3.1	-2.8	73	68	65	-.8	-.5
Converted paper product manufacturing (3222)	408	382	351	-26	-31	-.7	-.8	73	73	79	0	.8
Printing and related support activities (323)	780	710	734	-70	24	-.9	.3	92	91	94	-.1	.3
Petroleum and coal products manufacturing (324)	152	119	102	-33	-18	-2.4	-1.6	161	181	199	1.2	1.0
Chemical manufacturing (325)	1,029	930	891	-99	-38	-1.0	-.4	363	401	450	1.0	1.2
Basic chemical manufacturing (3251)	246	171	140	-76	-31	-3.6	-2.0	117	98	76	-1.8	-2.5
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing (3252)	151	114	89	-37	-26	-2.8	-2.5	54	56	54	.4	-.4
Pesticide, fertilizer, and other agricultural chemical manufacturing (3253)	54	45	35	-10	-10	-1.9	-2.4	23	19	22	-2.1	1.9
Pharmaceutical and medicine manufacturing (3254)	225	293	361	68	68	2.7	2.1	72	112	157	4.5	3.5
Paint, coating, and adhesive manufacturing (3255)	81	72	62	-8	-11	-1.1	-1.6	22	24	30	.8	2.1
Soap, cleaning compound, and toilet preparation manufacturing (3256)	127	122	125	-5	3	-.4	.3	43	52	64	1.8	2.0
Other chemical product and preparation manufacturing (3259)	144	112	79	-32	-33	-2.4	-3.4	34	36	42	.6	1.3
Plastics and rubber products manufacturing (326)	819	854	991	35	138	.4	1.5	122	164	245	3.0	4.1
Plastics product manufacturing (3261)	620	668	797	48	128	.8	1.8	95	133	198	3.4	4.1
Rubber product manufacturing (3262)	199	185	195	-14	10	-.7	.5	27	31	47	1.4	4.0
Nonmetallic mineral product manufacturing (327)	487	519	579	32	60	.6	1.1	69	85	114	2.1	2.9
Clay product and refractory manufacturing (3271) ..	79	72	80	-7	9	-.9	1.1	7	8	10	.2	3.2
Glass and glass product manufacturing (3272)	145	126	125	-19	-1	-1.4	-.1	19	22	33	1.6	3.9
Cement and concrete product manufacturing (3273)	178	230	278	52	48	2.6	1.9	27	38	49	3.4	2.5
Lime and gypsum product manufacturing (3274)	14	19	21	5	2	3.0	.9	4	5	6	1.6	2.1
Other nonmetallic mineral product manufacturing (3279)	72	72	75	0	3	.1	.4	12	13	16	1.0	2.3
Primary metal manufacturing (331)	630	511	494	-119	-17	-2.1	-.3	140	137	160	-.2	1.5
Iron and steel mills and ferroalloy manufacturing (3311)	168	107	76	-61	-31	-4.4	-3.4	47	49	56	.4	1.4
Steel product manufacturing from purchased steel (3312)	66	63	60	-3	-3	-.4	-.5	16	15	18	-.7	1.5
Alumina and aluminum production and processing (3313)	100	80	79	-19	-1	-2.1	-.2	29	25	26	-1.5	.3
Nonferrous metal (except aluminum) production and processing (3314)	102	81	80	-20	-1	-2.2	-.2	26	22	21	-1.9	-.3
Foundries (3315)	196	180	199	-16	20	-.9	1.0	21	25	38	2.1	4.2
Fabricated metal product manufacturing (332)	1,497	1,548	1,645	51	97	.3	.6	186	226	315	2.0	3.4
Forging and stamping (3321)	122	114	132	-9	18	-.7	1.5	18	23	36	2.6	4.5
Cutlery and handtool manufacturing (3322)	73	65	70	-8	6	-1.2	.8	8	10	15	1.9	3.7
Architectural and structural metals manufacturing (3323)	327	400	478	74	77	2.1	1.8	41	55	81	3.1	3.9
Boiler, tank, and shipping container manufacturing (3324)	108	95	90	-13	-5	-1.3	-.5	21	20	26	-.6	2.6
Hardware manufacturing (3325)	54	43	45	-11	3	-2.3	.6	9	10	14	.8	3.9
Spring and wire product manufacturing (3326)	74	71	59	-4	-12	-.5	-1.8	6	8	9	2.2	1.2
Machine shops; turned product; and screw, nut, and bolt manufacturing (3327)	287	318	333	32	15	1.1	.5	29	41	62	3.7	4.2
Coating, engraving, heat treating, and allied activities (3328)	137	148	151	11	4	.8	.2	12	16	25	2.8	4.4

See footnotes at end of table.

Table IV-1. Employment and output by industry, 1992, 2002, and projected 2012—Continued

Industry title and North American Industry Classification System code	Employment							Output				
	Thousands of jobs			Change		Average annual rate of change		Billions of chained 1996 dollars			Average annual rate of change	
	1992	2002	2012	1992-2002	2002-2012	1992-2002	2002-2012	1992	2002	2012	1992-2002	2002-2012
Other fabricated metal product manufacturing (3329)	316	296	287	-20	-9	-0.7	-0.3	42	43	49	0.3	1.2
Machinery manufacturing (333)	1,309	1,237	1,357	-72	120	-6	.9	186	230	341	2.1	4.0
Agriculture, construction, and mining machinery manufacturing (3331)	201	201	212	1	10	.0	.5	33	42	60	2.5	3.5
Industrial machinery manufacturing (3332)	142	132	125	-10	-6	-.7	-.5	22	31	47	3.3	4.4
Commercial and service industry machinery manufacturing (3333)	138	132	141	-6	9	-.5	.6	22	19	27	-1.3	3.6
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing (3334)	161	167	189	7	22	.4	1.2	22	29	40	2.8	3.2
Metalworking machinery manufacturing (3335)	241	217	251	-24	34	-1.0	1.5	21	23	38	.9	4.9
Engine, turbine, and power transmission equipment manufacturing (3336)	111	100	100	-11	0	-1.0	.0	23	34	44	4.1	2.7
Other general purpose machinery manufacturing (3339)	317	288	339	-29	51	-.9	1.6	43	51	84	1.7	5.2
Computer and electronic product manufacturing (334)	1,707	1,521	1,333	-186	-189	-1.1	-1.3	225	557	1,705	9.5	11.8
Computer and peripheral equipment manufacturing (3341)	329	250	182	-79	-68	-2.7	-3.1	28	263	2,293	24.9	24.2
Communications equipment manufacturing (3342)	210	191	201	-19	10	-.9	.5	45	100	268	8.2	10.4
Audio and video equipment manufacturing (3343)	58	42	38	-16	-3	-3.2	-.8	8	9	10	1.0	1.2
Semiconductor and other electronic component manufacturing (3344)	519	531	452	12	-79	.2	-1.6	67	134	149	7.2	1.1
Navigational, measuring, electromedical, and control instruments manufacturing (3345)	549	451	396	-98	-55	-1.9	-1.3	79	92	126	1.4	3.2
Manufacturing and reproducing magnetic and optical media (3346)	44	57	63	13	6	2.7	1.1	8	7	9	-1.4	2.1
Electrical equipment, appliance, and component manufacturing (335)	580	499	486	-81	-13	-1.5	-.3	88	103	142	1.6	3.3
Electric lighting equipment manufacturing (3351)	74	72	70	-2	-2	-.2	-.3	10	12	14	1.8	1.4
Household appliance manufacturing (3352)	106	98	84	-8	-14	-.8	-1.5	18	22	29	2.2	2.8
Electrical equipment manufacturing (3353)	219	176	180	-43	4	-2.1	.2	26	29	46	.8	4.7
Other electrical equipment and component manufacturing (3359)	180	152	151	-28	-1	-1.7	-.1	33	41	54	1.9	2.9
Transportation equipment manufacturing (336)	1,977	1,829	1,787	-148	-41	-.8	-.2	482	600	802	2.6	3.0
Motor vehicle manufacturing (3361)	260	267	251	7	-16	.3	-.6	166	236	319	3.6	3.1
Motor vehicle body and trailer manufacturing (3362)	126	154	172	28	18	2.0	1.1	15	22	39	3.7	5.7
Motor vehicle parts manufacturing (3363)	661	731	758	70	27	1.0	.4	115	187	275	5.0	3.9
Aerospace product and parts manufacturing (3364)	711	468	386	-242	-83	-4.1	-1.9	138	116	117	-1.7	.1
Railroad rolling stock manufacturing (3365)	27	23	24	-4	1	-1.7	.6	5	8	12	4.0	4.2
Ship and boat building (3366)	157	146	157	-10	11	-.7	.7	16	19	27	1.6	3.8
Other transportation equipment manufacturing (3369)	36	40	40	4	0	1.0	.1	7	12	16	5.9	2.4
Furniture and related product manufacturing (337)	563	605	666	42	62	.7	1.0	51	66	89	2.7	3.0
Household and institutional furniture and kitchen cabinet manufacturing (3371)	373	400	450	28	49	.7	1.2	30	39	53	2.7	3.0
Office furniture (including fixtures) manufacturing (3372)	146	151	155	5	5	.3	.3	16	20	27	2.2	3.1
Other furniture related product manufacturing (3379)	44	54	61	10	7	2.0	1.3	5	7	10	4.1	2.8
Miscellaneous manufacturing (339)	693	692	715	-1	24	.0	.3	85	114	151	3.0	2.9
Medical equipment and supplies manufacturing (3391)	297	309	329	12	20	.4	.6	37	55	91	4.1	5.2
Other miscellaneous manufacturing (3399)	395	383	387	-12	4	-.3	.1	49	59	60	2.0	.1
Wholesale trade (42)	5,110	5,641	6,279	531	638	1.0	1.1	600	1,025	1,622	5.5	4.7
Merchant wholesalers, durable goods (423)	2,699	3,007	3,464	308	457	1.1	1.4	-	-	-	-	-

See footnotes at end of table.

Table IV-1. Employment and output by industry, 1992, 2002, and projected 2012—Continued

Industry title and North American Industry Classification System code	Employment							Output				
	Thousands of jobs			Change		Average annual rate of change		Billions of chained 1996 dollars			Average annual rate of change	
	1992	2002	2012	1992-2002	2002-2012	1992-2002	2002-2012	1992	2002	2012	1992-2002	2002-2012
Motor vehicle and motor vehicle parts and supplies merchant wholesalers (4231)	302	346	393	43	47	1.3	1.3	-	-	-	-	-
Furniture and home furnishing merchant wholesalers (4232)	95	108	126	13	18	1.3	1.6	-	-	-	-	-
Lumber and other construction materials merchant wholesalers (4233)	170	225	270	56	45	2.9	1.8	-	-	-	-	-
Professional and commercial equipment and supplies merchant wholesalers (4234)	584	659	790	76	130	1.2	1.8	-	-	-	-	-
Metal and mineral (except petroleum) merchant wholesalers (4235)	118	126	147	8	21	.7	1.5	-	-	-	-	-
Electrical and electronic goods merchant wholesalers (4236)	329	367	450	38	83	1.1	2.1	-	-	-	-	-
Hardware, and plumbing and heating equipment and supplies merchant wholesalers (4237)	206	233	267	27	33	1.3	1.3	-	-	-	-	-
Machinery, equipment, and supplies merchant wholesalers (4238)	646	676	724	30	48	.5	.7	-	-	-	-	-
Miscellaneous durable goods merchant wholesalers (4239)	251	267	299	17	32	.6	1.1	-	-	-	-	-
Merchant wholesalers, nondurable goods (424)	1,892	2,015	2,124	124	109	.8	.5	-	-	-	-	-
Paper and paper product merchant wholesalers (4241)	159	160	176	1	16	.1	.9	-	-	-	-	-
Drugs and druggists' sundries merchant wholesalers (4242)	142	213	251	70	39	4.1	1.7	-	-	-	-	-
Apparel, piece goods, and notions merchant wholesalers (4243)	155	150	160	-5	10	-.3	.6	-	-	-	-	-
Grocery and related product wholesalers (4244)	621	676	725	55	49	.9	.7	-	-	-	-	-
Farm product raw material merchant wholesalers (4245)	95	75	57	-20	-19	-2.3	-2.8	-	-	-	-	-
Chemical and allied products merchant wholesalers (4246)	122	133	147	11	14	.9	1.0	-	-	-	-	-
Petroleum and petroleum products merchant wholesalers (4247)	137	111	77	-26	-34	-2.0	-3.6	-	-	-	-	-
Beer, wine, and distilled alcoholic beverage merchant wholesalers (4248)	115	133	138	18	5	1.5	.4	-	-	-	-	-
Miscellaneous nondurable goods merchant wholesalers (4249)	346	364	393	18	29	.5	.8	-	-	-	-	-
Wholesale electronic markets and agents and brokers (425)	519	619	691	99	72	1.8	1.1	-	-	-	-	-
Retail trade (44-45)	12,828	15,047	17,129	2,219	2,082	1.6	1.3	667	1,013	1,420	4.3	3.4
Motor vehicle and parts dealers (441)	1,428	1,879	2,124	451	245	2.8	1.2	-	-	-	-	-
Automobile dealers (4411)	935	1,250	1,408	316	158	3.0	1.2	-	-	-	-	-
Other motor vehicle dealers (4412)	81	142	168	61	26	5.8	1.7	-	-	-	-	-
Automotive parts, accessories, and tire stores (4413)	413	487	548	74	61	1.7	1.2	-	-	-	-	-
Furniture and home furnishings stores (442)	410	540	662	130	122	2.8	2.1	-	-	-	-	-
Furniture stores (4421)	229	281	332	52	52	2.1	1.7	-	-	-	-	-
Home furnishings stores (4422)	182	259	330	78	70	3.6	2.4	-	-	-	-	-
Electronics and appliance stores (443)	378	529	731	151	202	3.4	3.3	-	-	-	-	-
Building material and garden equipment and supplies dealers (444)	872	1,179	1,435	307	256	3.1	2.0	-	-	-	-	-
Building material and supplies dealers (4441)	734	1,026	1,259	292	232	3.4	2.1	-	-	-	-	-
Lawn and garden equipment and supplies stores (4442)	138	153	176	15	24	1.0	1.4	-	-	-	-	-
Food and beverage stores (445)	2,744	2,872	3,046	128	174	.5	.6	-	-	-	-	-
Grocery stores (4451)	2,378	2,478	2,611	100	133	.4	.5	-	-	-	-	-
Specialty food stores (4452)	228	254	298	25	45	1.1	1.6	-	-	-	-	-
Beer, wine, and liquor stores (4453)	138	140	136	2	-4	.2	-.3	-	-	-	-	-
Health and personal care stores (446)	780	947	1,080	166	133	2.0	1.3	-	-	-	-	-
Gasoline stations (447)	876	904	951	27	47	.3	.5	-	-	-	-	-
Clothing and clothing accessories stores (448)	1,249	1,308	1,304	59	-4	.5	.0	-	-	-	-	-
Clothing stores (4481)	893	957	952	64	-5	.7	.0	-	-	-	-	-
Shoe stores (4482)	202	182	170	-20	-12	-1.0	-.7	-	-	-	-	-
Jewelry, luggage, and leather goods stores (4483)	154	169	181	15	12	.9	.7	-	-	-	-	-

See footnotes at end of table.

Table IV-1. Employment and output by industry, 1992, 2002, and projected 2012—Continued

Industry title and North American Industry Classification System code	Employment							Output				
	Thousands of jobs			Change		Average annual rate of change		Billions of chained 1996 dollars			Average annual rate of change	
	1992	2002	2012	1992-2002	2002-2012	1992-2002	2002-2012	1992	2002	2012	1992-2002	2002-2012
Sporting goods, hobby, book, and music stores (451)	534	660	820	126	160	2.1	2.2	-	-	-	-	-
Sporting goods, hobby, and musical instrument stores (4511)	351	435	517	84	82	2.2	1.7	-	-	-	-	-
Book, periodical, and music stores (4512)	184	225	303	41	78	2.0	3.0	-	-	-	-	-
General merchandise stores (452)	2,414	2,821	3,169	407	348	1.6	1.2	-	-	-	-	-
Department stores (4521)	1,445	1,710	2,019	265	309	1.7	1.7	-	-	-	-	-
Other general merchandise stores (4529)	969	1,111	1,150	142	39	1.4	.3	-	-	-	-	-
Miscellaneous store retailers (453)	737	962	1,263	226	301	2.7	2.8	-	-	-	-	-
Florists (4531)	112	123	134	11	11	1.0	.9	-	-	-	-	-
Office supplies, stationery, and gift stores (4532)	353	435	562	82	128	2.1	2.6	-	-	-	-	-
Used merchandise stores (4533)	64	108	159	44	51	5.3	4.0	-	-	-	-	-
Other miscellaneous store retailers (4539)	208	297	408	89	111	3.6	3.2	-	-	-	-	-
Nonstore retailers (454)	405	447	546	43	99	1.0	2.0	-	-	-	-	-
Electronic shopping and mail-order houses (4541)	163	224	326	61	102	3.3	3.8	-	-	-	-	-
Vending machine operators (4542)	73	80	85	7	5	1.9	.8	-	-	-	-	-
Direct selling establishments (4543)	168	163	155	-6	-8	-.3	-.5	-	-	-	-	-
Transportation and warehousing (48, 492, 493)	3,462	4,205	5,120	744	914	2.0	2.0	436	576	820	2.8	3.6
Air transportation (481)	520	559	626	40	67	.7	1.1	100	142	229	3.6	4.9
Scheduled air transportation (4811)	491	516	564	25	48	.5	.9	-	-	-	-	-
Nonscheduled air transportation (4812)	29	43	62	14	19	4.1	3.7	-	-	-	-	-
Rail transportation (482)	246	218	197	-30	-21	-1.3	-1.0	37	44	58	1.8	2.7
Water transportation (483)	57	52	50	-5	-1	-.9	-.3	21	21	28	-.1	2.8
Deep sea, coastal, and great lakes water transportation (4831)	35	32	32	-4	0	-1.1	.1	-	-	-	-	-
Inland water transportation (4832)	21	20	18	-1	-2	-.7	-.9	-	-	-	-	-
Truck transportation and couriers and messengers (484, 492)	1,496	1,897	2,404	401	507	2.4	2.4	170	240	349	3.5	3.8
Truck transportation (484)	1,197	1,339	1,614	232	275	1.9	1.9	-	-	-	-	-
General freight trucking (4841)	797	957	1,156	160	199	1.9	1.9	-	-	-	-	-
Specialized freight trucking (4842)	311	382	458	71	78	2.1	1.8	-	-	-	-	-
Couriers and messengers (492)	389	558	790	169	232	3.7	3.5	-	-	-	-	-
Couriers (4921)	354	503	711	150	207	3.6	3.5	-	-	-	-	-
Local messengers and local delivery (4922)	35	55	80	20	25	4.5	3.9	-	-	-	-	-
Transit and ground passenger transportation (485)	298	372	488	84	116	2.8	2.8	21	28	30	2.2	1.2
Urban transit systems (4851)	25	38	57	14	18	4.6	4.0	-	-	-	-	-
Interurban and rural bus transportation (4852)	22	23	25	1	3	.5	1.1	-	-	-	-	-
Taxi and limousine service (4853)	58	66	77	8	11	1.3	1.8	-	-	-	-	-
School and employee bus transportation (4854)	121	154	200	33	46	2.4	2.7	-	-	-	-	-
Charter bus industry (4855)	27	35	48	8	11	2.8	2.8	-	-	-	-	-
Other transit and ground passenger transportation (4859)	36	56	82	20	27	4.5	4.0	-	-	-	-	-
Pipeline transportation (486)	60	42	42	-18	0	-3.6	.0	30	27	29	-1.0	.7
Scenic and sightseeing transportation and support activities for transportation (487, 488)	388	553	652	165	100	3.6	1.7	36	44	57	2.1	2.6
Scenic and sightseeing transportation (487)	18	26	30	8	4	3.9	1.4	-	-	-	-	-
Support activities for transportation (488)	370	527	623	157	96	3.6	1.7	-	-	-	-	-
Warehousing and storage (493)	406	514	660	108	147	2.4	2.5	21	31	42	4.1	3.1
Information (51)	2,841	3,420	4,052	779	632	2.6	1.7	481	891	1,486	8.4	5.3
Publishing industries (511)	854	970	1,133	115	163	1.3	1.6	134	222	334	5.1	4.2
Newspaper, periodical, book, and directory publishers (5111)	740	714	703	-27	-11	-.4	-.1	105	122	132	1.5	.8
Software publishers (5112)	114	256	430	142	174	8.4	5.3	31	102	229	12.6	8.4
Internet services, data processing, and other information services (516, 518, 519)	307	529	773	222	244	5.6	3.9	25	87	233	13.1	10.3
Internet publishing and broadcasting (518)	16	35	49	19	14	8.0	3.5	-	-	-	-	-
Internet service providers, web search portals, and data processing services (519)	259	447	663	189	216	5.6	4.0	-	-	-	-	-

See footnotes at end of table.

Table IV-1. Employment and output by industry, 1992, 2002, and projected 2012—Continued

Industry title and North American Industry Classification System code	Employment							Output				
	Thousands of jobs			Change		Average annual rate of change		Billions of chained 1996 dollars			Average annual rate of change	
	1992	2002	2012	1992-2002	2002-2012	1992-2002	2002-2012	1992	2002	2012	1992-2002	2002-2012
Internet service providers and web search portals (5181)	39	142	233	103	91	13.8	5.1	-	-	-	-	-
Data processing, hosting, and related services (5182)	220	305	430	86	125	3.3	3.5	-	-	-	-	-
Other information services (519)	32	47	61	14	14	3.7	2.7	-	-	-	-	-
Motion picture and sound recording industries (512) ..	254	387	503	133	116	4.3	2.7	50	93	178	6.3	6.7
Motion picture and video industries (5121)	231	360	472	129	112	4.5	2.7	-	-	-	-	-
Sound recording industries (5122)	23	27	32	4	4	1.6	1.4	-	-	-	-	-
Broadcasting and telecommunications (515, 517)	1,226	1,535	1,643	309	109	2.3	.7	272	491	745	6.1	4.3
Radio and television broadcasting (5151)	226	241	235	15	-6	.6	-.2	34	40	46	1.7	1.5
Cable and other subscription programming and program distribution (5152, 5175)	126	221	300	95	79	5.7	3.1	36	53	84	3.9	1.9
Cable and other subscription programming (5152)	54	93	127	39	34	5.7	3.2	-	-	-	-	-
Cable and other program distribution (5175)	73	128	173	55	45	5.8	3.1	-	-	-	-	-
Telecommunications, except cable and other program distribution (517, except 5175)	873	1,073	1,108	200	35	2.1	.3	202	401	645	7.1	4.9
Financial activities (52-53)	6,540	7,843	8,806	1,303	964	1.8	1.2	1,525	2,230	3,038	3.9	3.1
Credit intermediation and related activities, monetary authorities, and funds, trusts, and other financial vehicles (521, 522, 525, 533)	2,414	2,819	3,126	405	308	1.6	1.0	527	794	1,114	4.2	3.4
Monetary authorities and depository credit intermediation (521, 5221)	1,793	1,761	1,873	-31	112	-.2	.6	281	408	584	3.8	3.7
Nondepository credit intermediation and related support activities, funds, trusts, and lessors of nonfinancial intangible assets (except copyrighted works) (5222, 5223, 525, 533)	621	1,058	1,253	436	196	5.5	1.7	246	386	530	4.6	3.2
Nondepository credit intermediation (5222)	420	690	802	271	112	5.1	1.5	-	-	-	-	-
Activities related to credit intermediation (5223)	129	254	321	125	67	7.0	2.4	-	-	-	-	-
Funds, trusts, and other financial vehicles (525)	59	86	93	27	7	3.9	.8	-	-	-	-	-
Insurance and employee benefit funds (5251)	35	47	48	12	1	3.1	.2	-	-	-	-	-
Other investment pools and funds (5259)	24	39	45	15	6	4.9	1.5	-	-	-	-	-
Lessors of nonfinancial intangible assets (except copyrighted works) (533)	15	28	37	13	9	6.7	2.9	-	-	-	-	-
Securities, commodity contracts, and other financial investments and related activities (523)	476	801	925	325	124	5.3	1.5	97	350	526	13.6	4.2
Insurance carriers and related activities (524)	2,040	2,223	2,391	184	168	.9	.7	313	347	419	1.0	1.9
Insurance carriers (5241)	1,367	1,402	1,451	35	49	.3	.3	237	237	288	.0	2.0
Agencies, brokerages, and other insurance related activities (5242)	672	821	940	149	119	2.0	1.4	76	112	133	3.9	1.7
Real estate (531)	1,115	1,348	1,513	233	165	1.9	1.2	542	660	873	2.0	2.8
Lessors of real estate (5311)	563	605	640	43	34	.7	.6	-	-	-	-	-
Offices of real estate agents and brokers (5312)	220	299	346	79	47	3.1	1.5	-	-	-	-	-
Activities related to real estate (5313)	332	444	527	112	84	2.9	1.7	-	-	-	-	-
Rental and leasing services (532)	496	652	852	156	200	2.8	2.7	52	88	127	5.3	3.8
Automotive equipment rental and leasing (5321)	151	197	225	46	28	2.7	1.3	14	34	51	9.4	4.2
Consumer goods rental and general rental centers (5322-3)	267	353	484	86	131	2.8	3.2	15	20	27	3.2	2.7
Consumer goods rental (5322)	219	290	399	71	109	2.8	3.2	-	-	-	-	-
General rental centers (5323)	48	63	86	15	23	2.8	3.1	-	-	-	-	-
Commercial and industrial machinery and equipment rental and leasing (5324)	78	102	143	24	41	2.7	3.4	24	34	50	3.5	3.9
Professional, scientific, and technical services (54)	4,594	6,715	8,579	2,122	1,864	3.9	2.5	568	881	1,370	4.5	4.5
Legal services (5411)	950	1,112	1,330	162	218	1.6	1.8	142	151	171	.6	1.3
Accounting, tax preparation, bookkeeping, and payroll services (5412)	658	867	1,082	209	215	2.8	2.2	58	80	98	3.2	2.1
Architectural, engineering, and related services (5413)	902	1,251	1,306	349	54	3.3	.4	110	157	217	3.7	3.3

See footnotes at end of table.

Table IV-1. Employment and output by industry, 1992, 2002, and projected 2012—Continued

Industry title and North American Industry Classification System code	Employment							Output				
	Thousands of jobs			Change		Average annual rate of change		Billions of chained 1996 dollars			Average annual rate of change	
	1992	2002	2012	1992-2002	2002-2012	1992-2002	2002-2012	1992	2002	2012	1992-2002	2002-2012
Specialized design services (5414)	81	123	161	42	38	4.2	2.7	13	21	29	5.0	3.6
Computer systems design and related services (5415)	445	1,163	1,798	718	635	10.1	4.5	55	127	302	8.8	9.0
Management, scientific, and technical consulting services (5416)	358	732	1,137	374	406	7.4	4.5	59	114	169	6.7	4.1
Scientific research and development and other professional, scientific, and technical services (5417, 5419)	830	1,026	1,241	196	215	2.1	1.9	90	166	284	6.3	5.5
Scientific research and development services (5417)	490	537	573	47	36	.9	.6	-	-	-	-	-
Other professional, scientific, and technical services (5419)	340	488	668	149	179	3.7	3.2	-	-	-	-	-
Advertising and related services (5418)	370	442	525	72	84	1.8	1.7	42	67	111	4.8	5.2
Management of companies and enterprises (55)	1,623	1,711	1,906	88	195	.5	1.1	256	468	669	6.2	3.6
Administrative and support and waste management and remediation services (56)	4,753	7,584	10,391	2,831	2,807	4.8	3.2	240	433	638	6.1	4.0
Administrative support services (561)	4,516	7,267	9,967	2,751	2,720	4.9	3.2	206	384	572	6.4	4.1
Office administrative and facilities support services (5611-2)	275	390	508	116	117	3.6	2.7	27	58	87	8.1	4.2
Office administrative services (5611)	207	287	362	80	75	3.3	2.4	-	-	-	-	-
Facilities support services (5612)	68	104	146	36	42	4.3	3.5	-	-	-	-	-
Employment services (5613)	1,593	3,249	5,012	1,656	1,784	7.4	4.4	47	104	172	8.3	5.1
Business support and investigation and security services and support services, n.e.c. (5614, 5616, 5619)	1,244	1,772	2,261	528	489	3.6	2.5	64	114	165	6.0	3.7
Business support services (5614)	525	757	834	233	77	3.7	1.0	-	-	-	-	-
Investigation and security services (5616)	520	726	1,065	206	339	3.4	3.9	-	-	-	-	-
Other support services (5619)	199	289	362	90	72	3.8	2.3	-	-	-	-	-
Travel arrangement and reservation services (5615)	245	258	226	13	-32	.5	-1.3	21	25	36	1.8	3.7
Services to buildings and dwellings (5617)	1,160	1,597	1,980	438	383	3.3	2.2	47	81	109	5.5	3.1
Waste management and remediation services (562) ..	237	317	404	80	87	3.0	2.5	34	49	66	3.7	3.0
Waste collection (5621)	81	101	122	21	21	2.3	1.9	-	-	-	-	-
Waste treatment and disposal (5622)	86	120	154	34	34	3.4	2.5	-	-	-	-	-
Remediation and other waste management services (5629)	71	96	128	26	32	3.2	2.9	-	-	-	-	-
Educational services, private (61)	1,713	2,651	3,410	938	759	4.5	2.6	95	125	149	2.8	1.8
Elementary and secondary schools (6111)	467	785	866	318	81	5.3	1.0	-	-	-	-	-
Junior colleges (6112)	49	87	123	38	35	6.0	3.5	-	-	-	-	-
Colleges, universities, and professional schools (6113)	941	1,348	1,802	407	453	3.7	2.9	-	-	-	-	-
Business schools and computer and management training (6114)	57	83	115	26	32	3.8	3.3	-	-	-	-	-
Technical and trade schools (6115)	68	96	125	28	29	3.6	2.7	-	-	-	-	-
Other schools and instruction (6116)	112	203	307	91	104	6.1	4.2	-	-	-	-	-
Educational support services (6117)	20	49	74	29	25	9.4	4.2	-	-	-	-	-
Health care and social assistance (62)	10,178	13,533	17,919	3,355	4,368	2.9	2.8	719	962	1,328	3.0	3.3
Ambulatory health care services (621)	3,200	4,634	6,532	1,434	1,899	3.8	3.5	332	452	656	3.1	3.8
Offices of health practitioners (6211-3)	2,267	3,190	4,419	923	1,229	3.5	3.3	251	332	469	2.9	3.5
Offices of physicians (6211)	1,401	1,983	2,753	582	770	3.5	3.3	-	-	-	-	-
Offices of dentists (6212)	541	726	949	185	224	3.0	2.7	-	-	-	-	-
Offices of other health practitioners (6213)	326	482	717	156	235	4.0	4.1	-	-	-	-	-
Ambulatory health care services, except offices of health practitioners (6214-6, 6219)	933	1,444	2,113	511	670	4.5	3.9	82	120	188	3.9	4.6
Outpatient care centers (6214)	287	410	550	123	140	3.6	3.0	-	-	-	-	-
Medical and diagnostic laboratories (6215)	139	174	240	36	66	2.3	3.2	-	-	-	-	-
Home health care services (6216)	393	675	1,052	262	377	5.5	4.5	-	-	-	-	-
Other ambulatory health care services (6219)	114	184	272	70	88	4.9	4.0	-	-	-	-	-
Hospitals, private (622)	3,711	4,153	4,785	442	632	1.1	1.4	256	334	424	2.7	2.4

See footnotes at end of table.

Table IV-1. Employment and output by industry, 1992, 2002, and projected 2012—Continued

Industry title and North American Industry Classification System code	Employment							Output				
	Thousands of jobs			Change		Average annual rate of change		Billions of chained 1996 dollars			Average annual rate of change	
	1992	2002	2012	1992-2002	2002-2012	1992-2002	2002-2012	1992	2002	2012	1992-2002	2002-2012
General medical and surgical hospitals (6221)	3,492	3,925	4,511	433	586	1.2	1.4	-	-	-	-	-
Psychiatric and substance abuse hospitals (6222)	112	90	98	-22	8	-2.2	.9	-	-	-	-	-
Specialty (except psychiatric and substance abuse) hospitals (6223)	107	138	176	31	38	2.5	2.5	-	-	-	-	-
Nursing and residential care facilities (623)	2,044	2,743	3,685	700	942	3.0	3.0	71	88	114	2.1	2.6
Nursing care and residential mental health facilities (6231-2)	1,578	2,048	2,607	470	559	2.6	2.4	56	65	82	1.5	2.4
Nursing care facilities (6231)	1,273	1,574	1,925	300	351	2.1	2.0	-	-	-	-	-
Residential mental retardation, mental health and substance abuse facilities (6232)	305	474	682	169	208	4.5	3.7	-	-	-	-	-
Community care facilities for the elderly and residential care facilities, n.e.c. (6233, 6239) ..	465	695	1,078	230	382	4.1	4.5	16	23	33	4.2	3.4
Community care facilities for the elderly (6233) ..	364	530	815	167	285	3.8	4.4	-	-	-	-	-
Other residential care facilities (6239)	102	165	262	64	97	5.0	4.7	-	-	-	-	-
Social assistance (624)	1,223	2,004	2,917	780	913	5.1	3.8	59	88	132	4.1	4.1
Individual, family, community, and vocational rehabilitation services (6241-3)	777	1,269	1,867	493	597	5.0	3.9	34	52	78	4.2	4.1
Individual and family services (6241)	442	767	1,117	326	350	5.7	3.8	-	-	-	-	-
Community food and housing, and emergency and other relief services (6242)	76	126	187	50	62	5.2	4.1	-	-	-	-	-
Vocational rehabilitation services (6243)	259	376	563	117	186	3.8	4.1	-	-	-	-	-
Child day care services (6244)	447	734	1,050	288	316	5.1	3.6	24	37	55	4.3	4.0
Arts, entertainment, and recreation (71)	1,236	1,778	2,275	542	497	3.7	2.5	95	143	200	4.2	3.4
Performing arts, spectator sports, and related industries (711)	290	358	421	68	63	2.1	1.6	41	53	65	2.4	2.2
Performing arts companies, promoters, agents, managers and independent artists (7111, 7113-5)	195	240	277	45	37	2.1	1.4	27	34	43	2.4	2.3
Spectator sports (7112)	95	118	144	23	26	2.2	2.0	15	19	22	2.3	1.9
Museums, historical sites, and similar institutions (712)	75	113	136	38	24	4.1	1.9	4	7	9	5.9	2.7
Amusement, gambling, and recreation industries (713)	872	1,308	1,717	436	410	4.1	2.8	49	83	126	5.5	4.2
Amusement parks and arcades (7131)	122	154	197	32	44	2.3	2.5	-	-	-	-	-
Gambling industries (7132)	46	137	179	91	42	11.6	2.7	-	-	-	-	-
Other amusement and recreation industries (7139)	704	1,017	1,341	313	324	3.7	2.8	-	-	-	-	-
Accommodation and food services (72)	8,201	10,191	11,829	1,991	1,638	2.2	1.5	347	449	597	2.6	2.9
Accommodation (721)	1,562	1,780	2,080	218	301	1.3	1.6	90	116	173	2.5	4.1
Traveler accommodation (7211)	1,517	1,726	2,019	209	293	1.3	1.6	88	113	169	2.5	4.1
RV parks, recreational camps, and rooming and boarding houses (7212-3)	44	53	62	9	8	1.9	1.5	2	3	4	2.1	3.2
Food services and drinking places (722)	6,639	8,412	9,749	1,773	1,337	2.4	1.5	256	333	423	2.7	2.4
Full-service restaurants (7221)	3,117	3,990	4,631	873	641	2.5	1.5	-	-	-	-	-
Limited-service eating places (7222)	2,807	3,528	4,047	721	518	2.3	1.4	-	-	-	-	-
Special food services (7223)	398	507	634	109	127	2.5	2.3	-	-	-	-	-
Drinking places (alcoholic beverages) (7224)	317	387	439	70	52	2.0	1.3	-	-	-	-	-
Other services (81)	5,120	6,105	7,065	985	960	1.8	1.5	298	382	506	2.5	2.9
Repair and maintenance (811)	964	1,241	1,418	277	177	2.6	1.3	118	158	205	2.9	2.7
Automotive repair and maintenance (8111)	636	897	1,046	261	149	3.5	1.6	69	93	124	3.1	2.9
Electronic and precision equipment repair and maintenance (8112)	99	105	101	7	-5	.6	-5	17	17	18	.5	.2
Commercial and industrial equipment (except automotive and electronic) repair and maintenance (8113)	149	156	185	8	29	.5	1.7	16	28	42	5.4	4.1
Personal and household goods repair and maintenance (8114)	80	82	86	2	3	.2	.4	17	20	22	2.0	.7
Personal and laundry services (812)	1,099	1,247	1,485	148	238	1.3	1.8	76	98	125	2.8	2.4
Personal care services (8121)	434	523	667	89	144	1.9	2.5	20	27	35	2.8	2.6
Death care services (8122)	116	139	155	22	16	1.8	1.1	12	12	13	.5	.8

See footnotes at end of table.

Table IV-1. Employment and output by industry, 1992, 2002, and projected 2012—Continued

Industry title and North American Industry Classification System code	Employment							Output				
	Thousands of jobs			Change		Average annual rate of change		Billions of chained 1996 dollars			Average annual rate of change	
	1992	2002	2012	1992-2002	2002-2012	1992-2002	2002-2012	1992	2002	2012	1992-2002	2002-2012
Drycleaning and laundry services (8123)	359	366	393	7	27	0.2	0.7	18	21	25	1.5	1.7
Other personal services (8129)	190	219	270	29	51	1.4	2.1	26	38	53	4.0	3.3
Religious, grantmaking, civic, professional, and similar organizations (813)	2,177	2,861	3,460	684	600	2.8	1.9	94	117	166	2.2	3.6
Religious, grantmaking and giving services, and social advocacy organizations (8131-3)	1,403	1,944	2,372	541	428	3.3	2.0	49	66	107	3.1	4.9
Religious organizations (8131)	1,151	1,643	2,044	493	401	3.6	2.2	-	-	-	-	-
Grantmaking and giving services (8132)	121	129	122	8	-7	6	-5	-	-	-	-	-
Social advocacy organizations (8133)	132	172	206	40	34	2.7	1.8	-	-	-	-	-
Civic, social, business, and similar organizations (8134, 8139)	774	917	1,088	143	172	1.7	1.7	45	50	59	1.2	1.5
Civic and social organizations (8134)	381	414	468	33	54	.8	1.2	-	-	-	-	-
Business, professional, labor, political, and similar organizations (8139)	393	503	621	110	118	2.5	2.1	-	-	-	-	-
Private households (814)	880	757	703	-123	-54	-1.5	-7	10	9	11	-8	1.1
Federal Government	3,111	2,767	2,779	-344	12	-1.2	.0	394	378	443	-4	1.6
Postal Service (491)	800	845	807	45	-38	.5	-.5	51	61	76	1.7	2.2
Federal electric utilities	28	28	24	1	-4	.2	-1.7	7	9	11	2.5	2.0
Federal Government enterprises, n.e.c.	138	52	32	-86	-20	-9.3	-4.6	6	7	11	1.4	4.1
Federal general government	2,145	1,842	1,915	-303	73	-1.5	.4	252	209	216	-1.9	.4
Federal Government capital services	-	-	-	-	-	-	-	78	93	133	1.7	3.7
State and local government	15,675	18,722	21,240	3,047	2,518	1.8	1.3	685	839	980	2.0	1.6
Local government passenger transit	210	231	260	21	29	1.0	1.2	7	9	10	2.6	.4
State and local electric utilities	85	93	108	9	14	1.0	1.4	18	24	29	2.5	2.2
State and local government enterprises	532	689	734	157	46	2.6	.6	78	104	131	2.9	2.4
State and local government hospitals	1,083	995	1,024	-89	29	-.9	.3	41	48	56	1.5	1.5
State and local government education	7,875	9,876	11,606	2,002	1,730	2.3	1.6	276	321	375	1.5	1.5
State and local general government, n.e.c.	5,890	6,838	7,508	948	670	1.5	.9	207	241	260	1.5	.8
State and local government capital services	-	-	-	-	-	-	-	58	93	122	4.9	2.8
Owner-occupied dwellings	-	-	-	-	-	-	-	552	710	907	2.6	2.5
Agriculture (11)¹	2,639	2,245	1,905	-394	-340	-1.6	-1.6	274	300	352	.9	1.6
Agricultural products (111, 112)	2,318	1,955	1,632	-362	-324	-1.7	-1.8	221	246	286	1.1	1.5
Forestry, fishing, hunting, and trapping (113-2, 114)	96	68	50	-28	-17	-3.4	-2.9	12	12	14	-.4	1.7
Logging (1133)	120	98	90	-23	-7	-2.1	-.8	29	31	36	.8	1.4
Support activities for agriculture and forestry (115)	105	124	133	19	9	1.6	.7	11	11	16	-.3	3.4
Nonagriculture self-employed and unpaid family workers²	9,009	9,018	9,162	10	144	.0	.2	-	-	-	-	-
Secondary wage and salary jobs in agricultural production, forestry, fishing, and private household industries³	178	143	128	-35	-15	-2.2	-1.1	-	-	-	-	-
Secondary jobs as a self-employed or unpaid family worker⁴	1,973	1,545	1,434	-428	-111	-2.4	-.7	-	-	-	-	-
Total^{5,6}	123,325	144,014	165,319	20,689	21,305	1.6	1.4	12,272	16,822	23,250	3.2	3.3

¹ Includes agriculture, forestry, fishing, and hunting data from the Current Population Survey, except logging, which is from the Current Employment Statistics survey and government wage and salary workers, who are excluded.

² Comparable estimate of output growth is not available.

³ Workers who hold a secondary wage and salary job in agricultural production, forestry, fishing, and private household industries.

⁴ Wage and salary workers who hold a secondary job as a self-employed or unpaid family worker.

⁵ Wage and salary data are from the Current Employment Statistics survey, which counts jobs, whereas self-employed, unpaid family workers, and agriculture, forestry, fishing, and hunting employment are from the Current Population Survey, which counts workers.

⁶ Output subcategories do not necessarily add to higher categories as a byproduct of chainweighting.

NOTE: Dash indicates data not available. n.e.c. = not elsewhere classified. Due to rounding, detailed employment and output may not add to totals.

Table IV-2. Factors affecting industry output and employment, 2002-12

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
111,112	Agricultural products	Output, which is purchased primarily by the food industries and consumers, will grow slowly. Productivity will exhibit fast growth from improved farm equipment. Employment, especially of self-employed farmers, will contract as concentration leads to further declines in the number of family farms.
1131-2, 114	Forestry, fishing, hunting, and trapping	Output is consumed by the logging and food industries and will grow slowly as imports increase. Healthy productivity growth results in declining employment.
1133	Logging	Output will increase slowly due to its dependence on the slow-growing pulp-and-paper-processing and veneer and plywood industries. Productivity will grow with increased mechanization, resulting in declining employment.
115	Support activities for agriculture and forestry	Output is sold mainly as an input into the livestock and agriculture industries and will grow slightly faster than GDP. Because productivity is projected to increase rapidly, employment will grow slowly.
211	Oil and gas extraction	Output is entirely consumed as an input to the petroleum-refining and gas utilities industries, which will rely more on imports. Output is expected to decline slightly due to fluctuations in oil and gas prices, strict environmental regulations, limited access to Federal lands, and foreign competition. Productivity will increase due to continued technological advances in drilling and exploration techniques. Taken together, declining output and rising productivity will result in employment losses as domestic companies shift to foreign exploration and production. Industry consolidation, along with outsourcing to specialized firms for key operations such as exploration, will also limit employment growth.
2121	Coal mining	Although coal generates about half of the country's electricity and is used as an input to primary steel products, output is projected to decline as strict environmental regulations increase compliance costs. Employment declines are expected due to industry consolidation, international competition, and advances in productivity through improved mining technology and automation.
2122	Metal ore mining	Output growth will be constrained as international competition reduces demand from the primary nonferrous metals, steel, industrial chemicals, and nonresidential construction industries. Employment will decline due to industry consolidation and advances in productivity through improved mining technology and automation.
2123	Nonmetallic mineral mining and quarrying	Output depends on demand from the concrete products, residential construction, and agricultural chemicals industries and is projected to decline slightly. Employment is expected to show marginal growth, as productivity declines faster than output.
213	Support activities for mining	Output is measured primarily as the value of new oil and gas well exploration and drilling and is mostly consumed as an input into the oil and gas extraction industry. Output is expected to grow slowly and productivity is expected to grow even more slowly, resulting in a slight increase in employment.
2211	Electric power generation, transmission, and distribution	Output is consumed by individuals and as an input to many industries and is expected to increase as the demand for electricity increases with population and GDP growth. Rising productivity will cause employment to decline.
2212	Natural gas distribution	Output is consumed by individuals and as an input to many industries and will rise slowly in response to those sources of demand. Productivity gains will outpace output growth and, along with industry deregulation and restructuring, will lead to declining employment.
2213	Water, sewage, and other systems	Output is consumed mainly by individuals, but also as an input to many industries, and is expected to increase as population growth in rural areas increases the demand for water and sanitation services. Productivity will continue to decline, generating strong employment growth.
23	Construction	This industry is engaged in new construction of residential and nonresidential buildings and infrastructure such as highways, bridges, sewers, and railroads, as well as in maintenance and repair construction. Output is projected to increase due to population growth, the replacement or remodeling of industrial plants, and greater demand for nursing, extended-care, and other medical treatment facilities for an aging population. Employment will grow slightly more slowly than output, due to slow productivity growth.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
3111	Animal food manufacturing	Output is consumed as an input by the livestock and food-processing industries, by the food services and drinking places sector, and by individuals. Output will increase more slowly than GDP. Because productivity will grow almost as fast as output, employment will show no increase.
3112	Grain and oilseed milling	Output is consumed as an input by the livestock and food-processing industries and by individuals, and output also is exported. Output will grow more slowly than GDP. Because productivity will rise as fast as output, there will be no growth in employment.
3113	Sugar and confectionary product manufacturing	Output is consumed by individuals and as an input into the food-processing industries. Output will increase at half the rate of GDP. Rising productivity, caused by new plants and equipment, will result in no employment growth.
3114	Fruit and vegetable preserving and specialty food manufacturing	Output is consumed mainly by individuals, but also as an input into food services and drinking places. Output and productivity will grow slowly, at about the same rate, resulting in no growth in employment.
3115	Dairy product manufacturing	Output is consumed equally by individuals and as an intermediate input, the latter mainly by food services and drinking places. Output will show slight growth, but because new plants and equipment—combined with improved methods for processing milk products—will raise productivity, employment will decline.
3116	Animal slaughtering and processing	Output is consumed by individuals and as an intermediate input to food services and drinking places. Output will increase more slowly than GDP. Because productivity will grow yet more slowly—despite technological advances such as safety-enhancing packaging, which extends the shelf life of meat, and automated packaging, which reduces human error and contamination—employment will continue to rise.
3117	Seafood product preparation and packaging	Output is consumed mainly as an input into the food services and drinking places industry and by individuals. Output will show little growth as imports hold steady. Healthy productivity growth will result in a slight decline in employment.
3118	Bakeries and tortilla manufacturing	Output, consumed mainly by individuals and as an intermediate input by food services and drinking places, will increase more slowly than GDP. Because productivity will grow almost as fast as output, there will be only a slight increase in employment.
3119	Other food manufacturing	Output is demanded mainly by individuals, but also as an input into the food services and drinking places and food-processing industries. Output will grow at half the rate of GDP. Productivity's growth will almost match that of output, so employment growth will be minimal.
3121	Beverage manufacturing	Output is demanded by individuals and as an input into food services and drinking places. Output will grow more slowly than GDP. Productivity will grow more quickly than output, due to the automation of filling and packaging tasks. Therefore, employment in this capital-intensive industry will decline.
3122	Tobacco manufacturing	Output is consumed by individuals, serves as an input to other firms in the industry, and is exported. Output will continue to stagnate as an increasing population balances the negative effects of rising prices and changing attitudes against domestic consumption. Because healthy productivity growth is expected, employment will fall.
3131	Fiber, yarn, and thread mills	Output is purchased almost entirely by the apparel and textile industries, whose employment is expected to decline. In addition, imports will grow, causing output to continue to decline. Healthy productivity growth from faster looms, automated inspection machines, and further consolidation among textile producers will result in a continued plunge in employment.
3132	Fabric mills	Output is purchased almost entirely by the apparel and textile industries, whose employment is expected to decline. In addition, imports will grow, causing output to continue to decline. Healthy productivity growth from faster looms, automated inspection machines, and further consolidation among textile producers will result in a continued plunge in employment.
3133	Textile and fabric finishing and fabric coating mills	Output is purchased almost entirely by the apparel and textile industries, whose employment is expected to decline. In addition, imports will grow, causing output to continue to decline. Moderate productivity growth from faster looms, automated inspection machines, and further consolidation among textile producers will result in a continued plunge in employment.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
3141	Textile furnishings mills	Output is consumed mainly by individuals, with imports satisfying half of demand. Output is projected to grow at a third the rate of GDP, with productivity growing at almost twice the rate of output. The combination will result in a continued decline in employment.
3149	Other textile product mills	Output is projected to be split almost evenly between demand by individuals and demand by intermediate industries, while imports are expected to rapidly increase their share. This combination results in projected output growing more slowly than GDP. Because productivity is anticipated to grow faster than output, employment is projected to decline.
3151	Apparel knitting mills	Output is purchased by individuals and is used as an intermediate input by the apparel industry. Continued competition from abroad and foreign outsourcing will result in output rapidly declining. Employment will continue to decline in approximate step with output.
3152	Cut and sew apparel manufacturing	Output is consumed almost entirely by individuals and is projected to decline considerably. Imports are projected to grow twice as fast as GDP and will go from satisfying 65 percent of demand in 2002 to meeting almost all demand in 2012. Combined with projected healthy productivity growth, the increase in imports will result in employment declining to a quarter of its 2002 level.
3159	Apparel accessories and other apparel manufacturing	Output is consumed almost entirely by individuals and is projected to decline. Imports are projected to grow more than twice as fast as GDP and will go from satisfying 50 percent of demand in 2002 to meeting almost all demand in 2012. Combined with projected healthy productivity growth, the increase in imports will result in employment declining to half its 2002 level.
3161	Leather and hide tanning and finishing	Demand for output is almost entirely as an input for further processing, with a minor amount exported. Imports are projected to satisfy 60 percent of demand. Although productivity is expected to decline, employment is still projected to drop significantly.
3162	Footwear manufacturing	Output is sold almost entirely to individuals and is projected to grow more slowly than GDP. Imports are projected to satisfy almost 90 percent of demand. Productivity is anticipated to grow at more than twice the rate of output, so employment will continue to decline.
3169	Other leather and allied products manufacturing	Demand is split 90 percent to 10 percent between individuals and input sales, with imports satisfying 95 percent of output. Although productivity is projected to decline, employment will also decline.
3211	Sawmills and wood preservation	Output is purchased 95 percent as an input for new single-unit housing construction, other wood-processing industries, and the maintenance and repair industries, with the other 5 percent exported. Imports are projected to satisfy 25 percent of demand, still leaving output to grow almost as fast as GDP. Because productivity is projected to grow even faster, employment is expected to decline.
3212	Veneer, plywood, and engineered wood product manufacturing	Output is consumed primarily as an input to the residential construction and wood-processing industries, which will grow due to rising demand from an expanding population and increasing new-housing starts. Rising productivity and imports will result in average employment growth.
3219	Other wood product manufacturing	Output is purchased as an input into the construction industry and is projected to grow faster than GDP. Productivity is expected to grow at less than half the rate of GDP, so employment will increase.
3221	Pulp, paper, and paperboard mills	Output is sold 10 percent to consumers, 15 percent as an export, and the rest as an input; imports are projected to satisfy 25 percent of output. As the economy becomes more digital, less printed material will be produced, so output is projected to decline. Combined with healthy growth in productivity, employment is anticipated to decline by a quarter.
3222	Converted paper product manufacturing	Output is split 30 percent to individuals and 70 percent to inputs, especially into the trade industries. With slow growth in demand and projected faster growth in productivity, employment is expected to continue to decline.
323	Printing and related support activities	Output is directed mainly to the commercial printing, publishing, and advertising industries and will stagnate as services industries are replaced with in-house operations. Productivity and employment are also expected to show little or no growth.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
324	Petroleum and coal products manufacturing	Output is consumed by individuals and by the electric utilities and transportation industries. Output will increase at a third the rate of GDP, due to continued demand from motor vehicle users, as well as demand for kerosene and fuel oils. Advancing technology will cause productivity to increase faster than average, so employment will decline. Imports are projected to grow to twice the level of exports, contributing to the drop in employment.
3251	Basic chemical manufacturing	Output is mainly an intermediate input to the chemical, plastics, and petroleum-refining industries, in all of which demand will decline. Further, imports are projected to increase as the inorganic chemicals industry loses jobs to firms in Latin America and Asia, resulting in declining output. Although productivity is expected to decline slightly, employment will nevertheless decline.
3252	Resin, synthetic rubber, and artificial fibers and filaments manufacturing	Output is exported and is consumed by the construction, motor vehicles, goods-packaging, and textiles industries. None of these sources of demand is projected to show significant growth. Growing imports will result in slight declines in output, which, together with healthy growth in productivity, will lead to a sharp drop in employment.
3253	Pesticide, fertilizer, and other agricultural chemical manufacturing	Output is consumed mainly as an input by the agricultural industries and will grow at two-thirds the rate of GDP. This industry will produce more for export to Latin America and Asia, as developing nations advance in their agricultural methods. Because export demand is exactly matched by import growth, growth in intermediate demand will drive output. Productivity is projected to grow twice as fast as the average, resulting in a decline in employment.
3254	Pharmaceutical and medicine manufacturing	Output is consumed by individuals and the medical services industries and will grow slightly faster than GDP, due to a growing and aging population. Productivity will grow less than half as fast, resulting in employment gains. Sustained demand for lifestyle drugs and other promising new drugs should further stimulate employment.
3255	Paint, coating, and adhesive manufacturing	Output is consumed almost entirely as an intermediate input by the construction, motor vehicle, and other manufacturing industries with minimal imports and exports. Output is projected to grow at two-thirds the rate of GDP, while productivity is anticipated to grow twice as fast as the average. Together, the two trends are projected to lead to a drop in employment.
3256	Soap, cleaning compound, and toilet preparation manufacturing	Output is driven by consumer demand, with little impact from trade. Output will increase due to a growing and aging population, coupled with a rising standard of living. Productivity will increase, but at a slightly slower rate than output, resulting in minimal employment growth.
3259	Other chemical product and preparation manufacturing	Output is consumed primarily as an intermediate input to various manufacturing and construction industries, and no growth is projected to stem from these sectors. Growth in consumer demand will therefore be the catalyst behind an expected growth in output. The production process will change as environmental concerns increase efforts to produce more environmentally friendly substances to replace current adhesives, sealants, and printing inks. A healthy productivity growth rate of almost 3 times as fast as the average, coupled with little growth in output, will result in rapidly declining employment.
3261	Plastics product manufacturing	Output is used mainly as an intermediate input by a wide variety of industries and will increase due to growing demand for plastic products and the continuing substitution of plastic for other materials in production. Productivity will increase with the adaptation of labor-saving, computer-controlled automation, but at a slower rate than output, resulting in increases in employment.
3262	Rubber product manufacturing	Output is consumed as an intermediate input to the construction, motor vehicles, goods-packaging, and textiles industries and will increase as these industries grow. Rising imports and productivity will result in little growth in employment.
3271	Clay product and refractory manufacturing	Output continues to increase in response to demand for these products by many manufacturing industries and as an input to the construction industry. Productivity and imports are both expected to continue to increase, contributing to slower-than-average growth in employment.
3272	Glass and glass product manufacturing	Output is consumed almost entirely as an input by manufacturing industries. Output will show healthy growth, but because productivity is projected to grow at about the same rate, employment is expected to remain essentially unchanged.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
3273	Cement and concrete product manufacturing	Output will increase because construction, which is projected to rise, buys virtually all of the intermediate output. Productivity is projected to increase more slowly than output, leading to employment growth.
3274	Lime and gypsum product manufacturing	Because this industry's products are used by virtually every sector of the growing construction industry, output will increase. Productivity will continue to increase at almost the same rate as output. Employment will grow slower than the average.
3279	Other nonmetallic mineral product manufacturing	Output continues to increase in response to demand for these products by many manufacturing industries and as an input to the construction industry. Productivity will grow at about the same rate as output, but because average hours worked in this industry are projected to decline, employment will show some growth.
3311	Iron and steel mills and ferroalloy manufacturing	Output is overwhelmingly purchased as an intermediate input by industries such as automotive stampings and industrial machinery. Imports are expected to satisfy half of the projected growth, resulting in output growing at less than half the rate of GDP. Productivity, by contrast, is projected to grow more than 3 times as fast as output, leading to a rapid drop in employment.
3312	Steel product manufacturing from purchased steel	Output is overwhelmingly purchased as an intermediate input to other industries, such as automotive stampings and industrial machinery, but because imports will satisfy most of the increase, output will grow slowly. Productivity will increase slightly faster than output, so employment will decline slightly.
3313	Alumina and aluminum production and processing	Output is exported and is an intermediate commodity to metalworking machinery, motor vehicle parts, and other manufacturing industries. Intermediate demand is projected to decline slightly, while exports grow faster than imports, thus supplying the source of marginal output growth. Productivity growth will equal output growth, resulting in a slight decline in employment.
3314	Nonferrous metal (except aluminum) production and processing	Output growth depends on exports and intermediate demand in the jewelry, silverware, and lighter weight copper and aluminum industrial products industries. Imports are projected to grow faster than the domestic output drivers, resulting in a slight decline in output. Productivity also is expected to decline, but average hours worked will increase, so employment will show only a minor drop.
3315	Foundries	Output will grow from continued intermediate demand in the rail, motor vehicles, and heavy construction industries, as well as from overall growth in the economy, but will be limited as motor vehicle manufacturers use other materials, such as lightweight alloys and plastics, in production. Productivity continues to make healthy gains from improved technology, but because output is projected to grow faster, employment will rise.
3321	Forging and stamping	Output is purchased mainly by the construction, utilities, and oil and gas extraction industries. Demand for many of the fabricated products produced by these industries will increase as the industries expand. Output in this industry is projected to grow faster than GDP, whereas productivity will grow relatively more slowly, resulting in average employment growth.
3322	Cutlery and handtool manufacturing	Output is distributed in approximately equal amounts across consumers, other industries (principally the motor vehicle industry), and imports. Because projected imports cancel out intermediate demand, as it did in 2002, output, determined by consumers, will grow slightly faster than GDP. Productivity will grow more slowly than output, so employment will rise.
3323	Architectural and structural metals manufacturing	Output is consumed mainly as an input to construction and as an investment purchase by electric utilities and is projected to grow slightly faster than GDP. Productivity is projected to grow at the average rate, so employment will increase.
3324	Boiler, tank, and shipping container manufacturing	Output is consumed as an intermediate input to the beverage, food, soap, paint, and petroleum product industries and will increase as these industries grow, although a trend toward plastic bottles will cut production of metal cans. Shipping containers will be in demand for shipping an increasing number of goods. Imports and exports will cancel each other out. Productivity is projected to grow faster than output, so employment will drop.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
3325	Hardware manufacturing	Output is purchased mainly as an input by other industries, especially construction. Output is projected to grow faster than GDP, while productivity is expected to grow more slowly than output. Hence, employment will rise.
3326	Spring and wire product manufacturing	Output is purchased as an input to a variety of industries, principally the construction and motor vehicle industries. Demand from these sources is projected to decline. Imports are expected to increase, but because secondary products are produced in significant quantities, output will show an increase. Productivity will grow faster than average, thereby causing employment to decline.
3327	Machine shops; turned product; and screw, nut, and bolt manufacturing	Output is purchased mainly by motor vehicle manufacturers and repairers, aircraft producers, and other industrial manufacturers. Output is projected to grow faster than GDP, but productivity also is projected to exhibit healthy growth. Taken together, these trends indicate little growth for employment.
3328	Coating, engraving, heat treating, and allied activities	Output is entirely bought by a variety of other industries for use in their production processes. Output is projected to grow at a faster rate than GDP, but employment will show little change, because productivity also is projected to post strong growth.
3329	Other fabricated metal product manufacturing	Output is divided predominantly across exports, intermediate demand, and imports. Growth in intermediate demand will stem from nonelectric heating equipment, which is primarily an input to the construction industry, but will decline overall because electric heating competes with nonelectric heating. Output will grow at a third the rate of GDP, due to healthy export growth. Productivity is projected to grow slightly faster than output, so employment is expected to decline.
3331	Agriculture, construction, and mining machinery manufacturing	Output is purchased primarily as investment by the construction, petroleum, coal mining, and various manufacturing industries and will increase as the majority of these industries grow. This cyclical industry is affected by housing starts and consumer confidence. Increasing intermediate demand, such as that arising from expenditures made in search of new energy supplies, will increase employment. However, healthy productivity gains will limit this growth.
3332	Industrial machinery manufacturing	Output is driven by investment demand and trade. Imports will remain greater than exports, and the net will satisfy 15 percent of investment. Output still will grow faster than GDP. Because productivity will grow at a slightly faster rate than output, employment will show a minor drop.
3333	Commercial and service industry machinery manufacturing	Output is demanded by a plethora of GDP components and will grow slightly faster than GDP. Productivity will grow more slowly, resulting in employment growth.
3334	Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing	Demand for output is spread over a wide variety of areas, but is located mainly in investment and is an input to the motor vehicle and construction industries. Output is projected to grow faster than GDP, while productivity will grow more slowly, with the difference showing up as employment growth.
3335	Metalworking machinery manufacturing	Output is consumed as investment by the motor vehicle and construction industries, and 20 percent is satisfied by imports. Output will increase 50 percent faster than GDP. Productivity also will grow at a fast pace, but more slowly than output, so employment will increase.
3336	Engine, turbine, and power transmission equipment manufacturing	Output demand is heavily weighted to intermediate demand and foreign trade, with imports and exports basically canceling each other out. Output and productivity will increase more slowly than GDP; therefore, employment will remain constant.
3339	Other general purpose machinery manufacturing	Output is demanded by the investment, intermediate, and trade areas, with imports and exports canceling their individual impacts. Intermediate demand is projected to grow more than twice as fast as GDP, while investment will grow a third faster, leading to healthy output growth. Although productivity also is projected to grow, it will grow more slowly than output. Employment will therefore increase.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
3341	Computer and peripheral equipment manufacturing	Output is projected to keep up its extraordinary growth in real terms as computers continue to improve in quality. Because almost all the real growth is due to this increase in quality, a perceived growth in productivity follows, and employment actually will decline.
3342	Communications equipment manufacturing	Output is generated by demand from the investment, intermediate, and trade areas, with projected imports and exports canceling each other out. Broadband will be a significant factor in the next few years as growing numbers of Internet users demand higher speeds and greater connectivity to take advantage of various applications. Output will increase as firms continue to make major investments in technology by purchasing communications equipment. Popular applications (e-mail, Internet, messaging) will be increasingly capable of being run on wireless, hand-held devices. Output is projected to grow more than 3 times as fast as GDP, with productivity doing only slightly less well. Employment, therefore, will show little growth.
3343	Audio and video equipment manufacturing	Output will show little growth as healthy growth in consumer demand is more than matched by increases in imports. Productivity will increase faster than domestic demand, so employment will decline.
3344	Semiconductor and other electronic component manufacturing	Output is split into three equal segments: exports, imports, and intermediate demand. Trade cancels itself out, leaving growth dependent on sales to other industries, which are projected to grow very little. Electronic components and accessories are needed in cars, computers, cell phones, and cable modems. Because productivity is projected to grow more than twice as fast as output, employment will drop.
3345	Navigational, measuring, electromedical, and control instruments manufacturing	Output is used by the defense, aerospace, ship, and transportation industries. More satellites and greater accessibility to global positioning system signals will spur growth in ground-based navigation systems and thus increase output. Technology-driven productivity increases will result in declining employment. Some output is consumed by individuals, with the balance used as an investment or intermediate input by hospitals and other medical services. Output will continue to grow as an aging population requires additional medical care and seeks treatments using the latest technology. Productivity will increase faster than output, resulting in declining employment.
3346	Manufacturing and reproducing magnetic and optical media	Output consists of the production of blank audio- and videotapes and diskettes, as well as the copying of audio, software, and other data on magnetic, optical, and similar media. Imports will balance the demand from consumers and exports, so growth will depend on intermediate demand, which is expected to grow at two-thirds the rate of GDP. Productivity is projected to grow at less than half the rate of output, resulting in employment growth.
3351	Electric lighting equipment manufacturing	Output is purchased by individuals and as inputs into the construction, motor vehicle, and other industries. Imports equal all but intermediate sales, thereby driving growth. Output is projected to grow at half the rate of GDP, with productivity anticipated to grow slightly faster, resulting in a small drop in employment.
3352	Household appliance manufacturing	Output is purchased mainly by consumers, with imports projected to supply an increasing share as the significance of U.S.-based firms diminishes because of the large penetration of imports from Japan and other Asian countries. This relatively slow growth in output is matched with a healthy growth in productivity, so employment will decline.
3353	Electrical equipment manufacturing	Output is purchased for investment, for exports, and as intermediate inputs. Because imports are projected to equal the sum of investment and exports, output growth depends on growth of intermediate demand, which is expected to grow faster than GDP. Productivity is projected to grow slightly slower, so employment will rise.
3359	Other electrical equipment and component manufacturing	Output is purchased by consumers, for investment, for exports, and as inputs by other industries. Imports satisfy almost a third of demand, while intermediate inputs account for half of total demand. Output growth is projected to be slightly slower than that of GDP, productivity growth slightly slower still. Average hours are projected to increase such that, in combination with the increase in productivity, employment will decline slightly.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
3361	Motor vehicle manufacturing Motor vehicle manufacturing—continued	Output is purchased by consumers and as investment. Half of demand is satisfied by imports. Projected growth in investment is higher than projected growth in imports, so output will increase at a rate equal to that of GDP. Output growth will be limited due to an anticipated slowdown in the growth of the driving-age population, competition from foreign producers, improvements in vehicle quality that extend longevity, and safety and environmental regulations that increase production costs. Productivity will increase faster than output—due to technologies such as robotics, computers, and factory automation—resulting in declining employment.
3362	Motor vehicle body and trailer manufacturing	Output, which is purchased by individuals and for investment, will grow, because consumer demand is projected to increase at one-and-one-half times the rate of GDP, with investment increasing at twice the rate. Productivity is expected to grow more slowly than output, so employment will increase.
3363	Motor vehicle parts manufacturing	Output is consumed as an input into the motor vehicle industry, of which imports satisfy almost a quarter of demand. Output is projected to grow at a faster rate than GDP, while productivity is expected to grow more slowly, thereby creating some employment growth.
3364	Aerospace product and parts manufacturing	Output is purchased by defense, is exported, or is used as an input to aircraft and missiles. A growing international aircraft industry will cause imports to rise faster than domestic demand, so output will stagnate. Combined with increasing productivity, flat output growth will lead to a drop in employment.
3365	Railroad rolling stock manufacturing	Output is consumed as an investment or as an intermediate input by the rail transportation industry. As the industry improves its tracks and equipment to accommodate the increased demand for freight and passenger rail transportation, output will increase. Productivity will increase due to technological advances, but more slowly than output growth; employment will increase slightly.
3366	Ship and boat building	Output is consumed by the military, by individuals, and as capital investment by the water transport and energy industries. Rebounding prices for oil and natural gas will spur demand. In addition, the Oil Pollution Act of 1990, under which all tankers and tank barges must be converted to double hulls by 2015, means that many vessels will need to be refitted. Output will increase faster than productivity, resulting in slightly increasing employment.
3369	Other transportation equipment manufacturing	The industry is engaged primarily in manufacturing transportation equipment, with the output purchased chiefly by individuals, as well as by the military. Some is exported. Output will increase as demand for pleasure vehicles continues to grow. Automation will continue to prompt growth in productivity almost as rapid as the growth of output, resulting in only a slight increase in employment.
3371	Household and institutional furniture and kitchen cabinet manufacturing	Output is consumed mostly by individuals and the construction industry as an intermediate demand. Output will rise faster than productivity, resulting in an increase in employment.
3391	Medical equipment and supplies manufacturing	Some output is consumed by individuals, with the balance used as an investment or intermediate input by hospitals and other medical services. Output will continue to grow as an aging population requires additional medical care and seeks treatments using the latest technology. Productivity will continue to grow, but at a slower pace than output, and imports are expected to increase. Employment will rise slightly as a result.
42	Wholesale trade	Output is consumed as a trade margin on goods being sold at various stages of production and will continue to increase. Growth will vary, depending on the economic sector involved. The spread of new technology, such as electronic commerce, and consolidation of the industry due to globalization and cost pressures will be the main influences on employment. Productivity growth will be outpaced by output growth, resulting in increasing employment.
44-45	Retail trade	Although demand fluctuates with the business cycle, output is consumed as a trade margin on goods sold to individuals and will increase with population and GDP growth. Productivity will increase due to gains in technology and mergers, but at a slower pace than output. As a result, employment is expected to grow.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
481	Air transportation	Output is consumed by individuals, by business travelers, and as a transportation margin on shipping goods to market. Despite a recent slowdown in passenger air travel, output will grow in the United States and abroad over the next decade for both leisure and business travel as the population and GDP increase. Cargo traffic is expected to increase with the economy and growing world trade. Cargo traffic also should be stimulated by the development of global electronic commerce and manufacturing trends such as just-in-time delivery, which require more materials to be shipped rapidly. Productivity will continue to rise, but at a slower rate than output, resulting in employment growth.
482	Rail transportation	Output is consumed by individuals and as a transportation and export margin on virtually all manufactured products. Demand for railroad freight service will grow as the economy expands and intermodal systems that use trucks to pick up and deliver shippers' sealed trailers or containers and that utilize trains to transport them long distance come into greater use. Productivity gains will be affected by innovations such as larger, faster, more fuel efficient trains and computerized classification yards; computerized tracking of freight cars to match empty cars with the closest loads; and computer-assisted dispatching of trains. Computer-assisted devices alert employees to train malfunctions. Work rules now allow trains to operate with two-person crews. Productivity will exceed output growth and will cause employment to decline still further. Employment in most rail occupations will continue to decline, due in part to the consolidation of railroads and job duties.
483	Water transportation	Output is consumed by individuals and as a transportation margin on shipping goods to market. Output will grow as GDP and the population increase, but at a slower rate than productivity. As a result, employment will decrease.
484, 492	Truck transportation and couriers and messengers	Output is consumed by individuals and as a transportation margin on shipping goods to market and will grow as GDP and the population increase. Trucking has been accounting for a rising share of freight transportation revenue. Growth in the industry parallels economic upswings and downturns. Productivity will increase at a slower rate than output. Employment will continue to increase. Additional employment growth in the truck transportation industry will result from manufacturers' willingness to concentrate more on their core competencies—producing goods—and to outsource their distribution functions to trucking companies.
485	Transit and ground passenger transportation	This industry provides local and suburban passenger transportation services by bus, taxi, and subway. Output is purchased by individuals, by businesses, and by State and local governments for school transportation. Output will rise due to population growth, while productivity will decline, resulting in an increase in employment.
486	Pipeline transportation	Output is consumed as a transportation margin on shipping petroleum and will grow slightly as GDP and the population increase. Productivity will increase even less than output, resulting in no change to employment.
487, 488	Scenic and sightseeing transportation and support activities for transportation	Output is purchased by other transportation industries, by individuals, and as intermediate demand for exports. Output will increase as packaging, freight, cargo arrangement, and other transportation-related services remain instrumental to logistics management. Productivity will grow, but at a slower rate than output, resulting in employment growth.
491	Postal Service	Output is consumed by individuals and firms as a business expense and will rise slightly as the Postal Service delivers increasing numbers of packages shipped by manufacturers and delivery services on the final leg of their local delivery as first-class mail. Competition from private delivery companies and other industries, such as electronic communications, will continue to increase, dampening output growth. Productivity will increase with automation at a faster rate than output, due to the use of automated materials-handling equipment and optical character readers, barcode sorters, and other automated sorting equipment. Employment will continue to decline as a result of these combined factors.
493	Warehousing and storage	Output is consumed by individuals and as a transportation margin on shipping goods to market. Manufacturers' willingness to concentrate more on their core competencies and to outsource their distribution functions to warehousing companies will spur output growth. Firms in other industries will increasingly employ this industry's logistical services, such as inventory management and just-in-time shipping. Also, the expansion of electronic commerce, as more consumers and businesses make purchases over the Internet, will continue to increase demand for the transportation and logistical services of the warehousing industry. Productivity will rise at a much slower rate than output, resulting in increased employment.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
5111	Newspaper, periodical, book, and directory publishers	Output is purchased mostly by consumers. Output will go up slightly, driven mostly by custom publishing and growing demand for ethnic newspapers and magazines. In custom publishing, companies and other organizations order magazines from publishers specifically for their customers to increase customer loyalty and advertise new company products. Consolidation in the industry, a greater reliance on freelance writers, and the increasing automation of the prepress function in newspaper-printing plants will decrease the number of people needed in this industry. Due to efficiency gains, productivity will increase at a faster rate than output, and employment will decrease as a result.
5112	Software publishers	Output is purchased by government and as investment, with intermediaries scattered among most industries. Output has grown and should continue to grow at a robust rate, given the proliferation of software across all segments of society. The software-publishing industry should be the beneficiary of rapid technological change, and productivity should continue to exhibit healthy gains. The emergence and rapid growth of video games should bode very well for software publishers. Productivity is increasing at a much slower rate than output, resulting in a significant increase in employment.
516, 518, 519	Internet services, data processing, and other information services	Internet services will expand as the amount of data generated by the Internet economy continues to grow. Both output and productivity should grow rapidly. Employment will continue to increase as well. While the Internet will grow and expand even more, offshore outsourcing—of data-processing jobs in particular—should temper employment growth.
512	Motion picture and sound recording industries	Most output is consumed as an input to motion picture theaters and television, with individuals and exports accounting for the rest. Output will increase as a growing population continues to enjoy movies as entertainment. Blockbuster films will dominate the industry, especially with the continued expansion of multiplex theaters and increased exports from film distribution rights. Productivity will rise, but at a slower rate than output; as a result, employment is expected to increase.
5151	Radio and television broadcasting	Output is purchased mainly by individuals and will increase with population and GDP growth. Increasing commuting times will account for a strong radio advertising market. Growing competition from other media sources—specifically, cable television and satellite TV—should continue to limit growth in television advertising revenue. Digital broadcasting and recording technology will continue to improve productivity at a faster rate than output growth, causing employment to decrease. Further productivity gains will result from the remote operation of stations and by combining multiple stations and should continue throughout the projection period.
5152, 5175	Cable and other subscription programming and program distribution	Output is purchased mainly by individuals. Moderate output growth will result from demand due to population and from GDP growth. Productivity will decrease as companies upgrade cable and other pay television infrastructures, allowing providers to deliver telephone and Internet services, as well as television programming. Increasing output and declining productivity will result in increases in employment.
517 except 5175	Telecommunications, except cable and other program distribution	Individuals purchase the largest share of output, followed by government, business, and other institutions. Output growth will be strong as advanced technology and competition lower prices for high-speed Internet access and wireless telephone services and as deregulation expands the breadth of residential telecommunication services offered. In addition, business demand is expected to rise as companies increasingly rely on their telecommunications systems to conduct electronic commerce. This industry's employment gains, however, are expected to be limited by productivity gains as technological improvements such as fiber-optic lines and advanced switching equipment increase the data transmission capacity of telecommunications networks.
521, 5221	Monetary authorities and depository credit intermediation	Output is consumed by individuals and organizations and will increase as banks offer a variety of financial products to compete with other financial service companies. Mergers are expected to continue, which can lead to cutbacks and consolidation, but to a lesser degree than before. Bank branches are making a comeback, but other factors, such as automated teller machines and Internet banking, will balance this service out. Output will increase rapidly, productivity almost as quickly. Back-office staff are most likely to be affected adversely by technology, which will continue to result in a streamlining of back-office functions, reducing the need for some tellers. Employment will increase slightly over the period.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
5222, 5223, 525,533	Nondepository credit intermediation and related support activities, funds, trusts, and lessors of nonfinancial intangible assets (except copyrighted works)	Output is consumed by individuals and organizations. A stable long-term growth path wherein interest rates on government bonds tend to their historical average will help sustain demand for loans from these nonbank lenders. Banks are opening their own finance and mortgage banking companies, causing an employment shift to this industry from the banking industry. Productivity gains due to innovations such as credit scoring will dampen employment growth in the loan and credit business. But productivity will increase more slowly than output growth, so employment, which has historically exhibited positive growth, is expected to continue to increase.
523	Securities, commodity contracts, and other financial investments and related activities	Output is consumed by individuals and financial and insurance firms. Rapid output growth is expected as the baby boomers enter their peak savings years and the population, in general, becomes more sophisticated about investing. Productivity will increase, although not as fast as output, as securities and mutual fund markets are automated. Increasing numbers of self-directed pension plans will continue to drive demand in this industry and will increase the demand for investment advisors to help people invest this pool of money, so employment will grow. In an effort to curb costs and to be more competitive in the market, most firms will be reluctant to add new employees to their payroll unless those employees are definitely needed.
5241	Insurance carriers	Output is purchased primarily by individuals and a variety of intermediate sectors and will increase as a growing and increasingly affluent population demands more insurance of all kinds, particularly health insurance. Population growth will stimulate demand for insurance products, yet as insurance companies begin to offer more information and services on the Internet, and as workers become more productive due to technological advancements, employment is expected to increase very little. Productivity will increase at a slower rate than output, and employment will increase slightly as a consequence.
5242	Agencies, brokerages, and other insurance related activities	Output is purchased mostly by the insurance carrier industry. Population growth will stimulate demand for insurance products, yet, as more information and services are offered on the Internet, and as workers become more productive due to technological advancements, employment is expected to increase very little. However, the number of agents employed directly by insurance carriers reportedly is declining, and this employment will shift to agencies and brokerages, so agent employment will most likely remain stable. Productivity will grow at a much slower rate than output, causing employment to increase modestly.
531	Real estate	Rising output will be purchased by individuals and businesses as rent, real estate commissions, or fees. The industry is more sensitive to the business cycle than most. New technology and consolidation will increase productivity less than output, resulting in modest employment growth.
5321	Automotive equipment rental and leasing	Output is purchased by individuals and by a variety of industries, including wholesale trade. Output will continue to increase following historical trends, due to firms' preference for leasing and renting motor vehicles. Productivity will grow less than output, and as a result, employment will increase.
5322-3	Consumer goods rental and general rental centers	Output is purchased primarily by individuals. Output growth will result from consumers' preference for leasing personal and household-type goods, because leasing and renting require smaller capital outlays than does purchasing. Productivity will increase at a slower rate than output, causing employment to rise.
5324	Commercial and industrial machinery and equipment rental and leasing	Services are purchased primarily by individuals, wholesale and retail trade, and construction. The industry is engaged chiefly in renting or leasing commercial and industrial-type machinery and equipment. Output will continue to increase, while productivity declines slightly, causing employment to rise.
5411	Legal services	Output is purchased by individuals and by a wide variety of industries, including insurance and wholesale and retail trade. Output should grow as new legal issues emerge with the increasing use of the Internet in business transactions. Output growth will be stimulated by increased litigation due to a rise in the amount and complexity of business activities. Productivity will decrease, and employment will increase more rapidly than output as a result.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
5412	Accounting, tax preparation, bookkeeping, and payroll services	Output is consumed primarily by individuals and as an intermediate input by a wide variety of industries and will continue to increase as firms contain expenses by outsourcing or using consultants. Productivity will be flat or actually will decrease, resulting in employment growth. Employment will not grow as fast as in the past, because of outsourcing abroad and because accounting firms will be prevented from performing all but audit-related work for clients.
5413	Architectural, engineering, and related services	Most output is purchased by individuals and by the construction and engineering industries. Output will increase as firms contract out for engineering and architectural services; the rate of increase, however, will be slower than otherwise, due to strong competition from imported services from India, Russia, and other countries. Productivity will increase at a rate only slightly slower than output, so employment will continue to grow, but also at a slow rate.
5414	Specialized design services	Output is purchased by individuals and most industries and will continue to increase. Productivity is expected to increase because graphic designers, the largest component, are heavy users and early adopters of new information technologies. Productivity growth will not keep pace with output growth, however, resulting in rising employment.
5415	Computer systems design and related services	Output is purchased by government, as personal investment by individuals, and as intermediate purchases by finance. This industry includes computer software development; networking and data communications; Internet and online services; data processing, maintenance, and repair; and other specialized consulting. Output will increase rapidly as businesses contract out computer-related functions to establishments in the industry. The category of computer networking and data communications has become one of the fastest-growing and technologically dynamic segments. Factors increasing demand for networks and network products and services include the Internet, the expansion of intranets and extranets, the need for remote access to computers, an increase in the number of PCs connected to LANs, and the growing importance of security. Productivity should continue to increase at a rate about half as fast as output growth, as computer networks, systems, and programs become more advanced. Employment will increase significantly over the projection period as a result. While there should continue to be growth in this industry, it will be tempered by a shift toward outsourcing information technology service jobs overseas.
5416	Management, scientific, and technical consulting services	Output is consumed primarily as an intermediate input by a wide variety of industries and will continue to increase as firms contain expenses by outsourcing or using consultants. Due to continued economic development and growing business complexity, businesses will continue to need advice on planning and logistics, the implementation of new technologies, and compliance with government tax, environmental, and employee benefits and workplace safety laws and regulations. Productivity will decline, assuring continued strong employment growth.
5417, 5419	Scientific research and development and other professional, scientific, and technical services	Output is consumed primarily by individuals. Growth in research-and-development expenditures for services such as scientific research, marketing research, and public-opinion polling will stimulate demand for output. Productivity will increase at a slower rate than output, so employment will continue to grow.
5418	Advertising and related services	Output is purchased by many industries, the largest being retail trade. Strong output growth is expected due to new opportunities created by the Internet and international markets and as functions within firms are specialized further. In the wake of corporate scandals, more emphasis will be placed on improving the image of the client and building public confidence. Growth will continue to be led by technology-oriented jobs, including programmers, graphic designers, and media managers. Productivity will grow fast, but at a slower rate than output, resulting in modest employment growth. Employment growth will be dampened by the increased use of more efficient nonprint media advertising, including the Internet and radio, which could result in some workers losing their jobs. Layoffs are common in advertising and public-relations service firms when accounts are lost, major clients cut budgets, or agencies merge.
55	Management of companies and enterprises	Output is consumed by individuals and firms. Output will grow at a rate faster than productivity, resulting in an increase in employment.
5611-2	Office administrative and facilities support services	Output is purchased by individuals, by government, and as an intermediate input by a variety of industries and will increase as this industry benefits from outsourcing. Productivity will rise at a slower rate than output, resulting in faster-than-average employment growth.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
5613	Employment services	Many intermediate industries purchase personnel services. Rapid growth in output will be encouraged by expansion of the industry to include many professional occupations, such as accountants, lawyers, managers, and engineers. In addition, firms will increasingly use personnel supply services to reduce costs, improve flexibility, and screen candidates for permanent positions. Productivity will rise more slowly than output, resulting in strong employment growth.
5614, 5616, 5619	Business support and investigation and security services and support services, n.e.c.	Many intermediate industries purchase miscellaneous business services. Output will continue to increase, driven by demand for security services and other business services. Productivity will increase at a slower rate than output, resulting in employment growth.
5615	Travel arrangement and reservation services	Most output is purchased by individuals, although intermediate output is purchased by many industries. Output is expected to increase, reflecting increasing business and leisure travel. However, productivity will rise more rapidly than output, due to the increased use of technology, especially the Internet. Employment will decrease as a result.
5617	Services to buildings and dwellings	Output is purchased by individuals and by many industries, including real estate, trade, educational services, and hotels. Output will continue to grow because of rising demand from increasing numbers of consumers. Productivity will continue to increase, but at a much slower rate than output, resulting in employment growth.
562	Waste management and remediation services	Output will grow as fast as GDP. Employment will grow slightly more slowly than output, due to a slight increase in productivity in this labor-intensive industry.
61	Educational services, private	Output is consumed mostly by individuals, with some government use and exports in the form of foreign students. Output will continue to increase in response to demand for education and training by individuals of all ages. Productivity will continue to decrease, employment to increase.
6211-3	Offices of health practitioners	Output is consumed by individuals and will increase, driven by a growing and aging population that will continue to demand a high level of quality healthcare services. Productivity will rise only slightly and at a much slower rate than output. As a result, employment will exhibit strong growth.
6214-6, 6219	Ambulatory health care services, except offices of health practitioners	Most output is consumed by individuals. This industry includes many fast-growing sectors, such as home healthcare, outpatient care centers, and medical and diagnostic laboratories. Fast growth of output will result. Productivity will increase at a much slower rate than output, resulting in strong growth for employment.
622	Hospitals, private	Output is consumed by individuals and will increase, driven by a growing and aging population. Productivity will increase at a slower rate than output, and employment growth will result. Employment growth in hospitals will be constrained somewhat by an increase in ambulatory or same-day surgery, advances in treatment, and a continued emphasis on controlling costs by diverting some care to more cost-effective outpatient and ambulatory care settings.
6231-2	Nursing care and residential mental health facilities	Output is consumed by individuals. Output will increase, driven by an aging population and increasing demand for nursing and mental health care. Declining productivity will result in rising employment, but growth will be limited by the relatively high costs of facility-based care and by consumer preference for care provided in alternative settings, such as in homes or other community-based residential care facilities.
6233, 6239	Community care facilities for the elderly and residential care facilities, n.e.c.	Most output is consumed by individuals. Output will increase due to rising demand for services from a growing elderly population with a desire to maintain independent lifestyles. Productivity will decline and employment will increase rapidly as a result.
6241-3	Individual, family, community, and vocational rehabilitation services	Output is consumed by individuals. Output growth will be due mostly to the expansion of services for the elderly and the aging baby-boom generation. Similarly, services for the mentally ill, the physically disabled, and families in crisis will be expanded. Increasing emphasis on providing home care services rather than more costly nursing home or hospital care, and on earlier and better integration of the physically disabled and mentally ill into society, also will contribute to growth, as will increased demand for drug and alcohol abuse prevention programs. Productivity will remain essentially flat, resulting in strong employment growth, especially in private social service agencies, as State and local governments contract out their social services in an effort to cut costs. Employment growth will depend, in large part, on the amount of funding made available by government and private organizations.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
6244	Child day care services	Output is consumed entirely by individuals. Continued rapid output growth will result from growth in both the number of children under 5 years old and the labor force participation rate of women of childbearing age. Growth in the number of employer-operated centers and government increases in funding and promotion also will stimulate demand. Productivity will increase, but at a much slower rate than output, resulting in strong employment growth.
7111, 7113-5	Performing arts companies, promoters, agents, managers and independent artists	Output is purchased by individuals, by food services and drinking places, and as input to many industries. Output is increasing due to demand from a growing population with more leisure time. Productivity will increase at a slower pace than output growth, resulting in employment growth.
7112	Spectator sports	Output is consumed by individuals and by radio and television broadcasting. Output will grow as a larger population with more leisure time becomes increasingly interested in sports. Productivity will decline slightly, resulting in employment growing even faster than output.
712	Museums, historical sites, and similar institutions	Most output is consumed by individuals and will continue to grow as public interest in science, art, and history increases due to growth in both leisure time and disposable income. Productivity will rise, but at a much slower rate than output, resulting in increased employment.
713	Amusement, gambling, and recreation industries	Output is purchased by individuals and will continue to grow due to increasing disposable income, leisure time, and awareness of the health benefits of physical fitness. Productivity will increase, but at a slower rate than output, causing employment to increase as a result.
7211	Traveler accommodation	Output is purchased by individuals and businesses. Output will increase due to demand for short-term lodging. Productivity will increase at a slower rate than output, resulting in average employment growth.
7212-3	RV parks, recreational camps, and rooming and boarding houses	Output is consumed by individuals. Output will continue to increase due to demand for recreational parks, campgrounds, and vacation camps, reflecting increased amounts of leisure time and disposable income. Productivity will grow, but at a much slower rate than output, causing employment to rise.
722	Food services and drinking places	Output is consumed primarily by individuals. Output will increase due to demographic factors such as increases in population, growth of personal income, increased leisure time, and a rise in the number of dual-income families. Productivity will increase as the shift from more formal to more casual dining and from independent to chain establishments promotes centralized operations and a greater use of automated equipment. Still, productivity will rise at a slower rate than output. As a result, employment will increase.
8111	Automobile repair and maintenance	Output is consumed primarily by individuals and will increase as the growing population of increasingly affluent individuals demands services such as carwashes and quick oil changes. Output growth will be constrained because newer cars have become more reliable over time and need less servicing and repair. Productivity will increase, but at a slower rate than output, and employment will grow as a result.
8112	Electronic and precision equipment repair and maintenance	Output is purchased by individuals and government, with intermediate consumption scattered among most industries. Output will increase slightly, but growth will be constrained as mass-produced electrical equipment becomes cheaper to replace than repair. Productivity will increase more than output, and employment will decline as a result.
8113	Commercial and industrial equipment (except automotive and electronic) repair and maintenance	Output is consumed mostly by intermediate consumption scattered among most industries. Output will increase faster than productivity, causing employment to rise.
8114	Personal and household goods repair and maintenance	Output is consumed mostly by intermediate consumption scattered among many industries. Output will increase slightly, constrained by more disposable consumer goods that are cheaper to replace than repair. Productivity will increase at a pace almost equaling output growth, resulting in limited employment growth.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
8121	Personal care services	Output is consumed by individuals. Output will continue to grow as demand for personal care services is driven by a growing population, rising incomes, and increased demand for improved personal care or grooming. Productivity will increase, but at a slower rate than output, resulting in employment growth.
8122	Death care services	Output is purchased mostly by individuals. Output should continue to rise as the population and the number of deaths increase. Productivity will increase in areas such as embalming, but at a slower rate than output, so employment will increase.
8123	Drycleaning and laundry services	Output is used mainly by individuals, but also is contracted for by a number of industries, such as food services and drinking places. Output will increase, driven by a growing, increasingly affluent population. Fewer stores will be family owned and operated than in the past. The use of central drycleaning facilities that process work for multiple stores will result in rising productivity, although output will grow even faster. Total employment will increase slightly due to an increase in wage and salary workers, but the number of self-employed and unpaid family workers will decline.
8129	Other personal services	Output is purchased mainly by individuals and will increase due to sustained demand for individual services such as the use of parking lots and garages. Productivity will increase at a slower rate than output, resulting in continued employment growth.
8131-3	Religious, grantmaking and giving services, and social advocacy organizations	Output is consumed mostly by individuals. Output will increase due to growing demand from an increasingly affluent population involved in advocacy groups for such causes as religion, human rights, and conservation. Productivity will increase, but at a slower pace than output growth, so employment will rise.
8134, 8139	Civic, social, business, and similar organizations	Output is consumed mostly by individuals. Output will increase slightly faster than the population, due to rising demand for the services of civic, social, business, and similar organizations. Productivity will decline, leading to employment growth.
814	Private households	Output is purchased by individuals and will increase because of demand for inside workers. Government regulation of the workplace makes the use of private household workers expensive relative to the use of specialized firms, constraining industry growth. Productivity will increase, and employment will decline as a result.
...	Federal electric utilities	Output will increase, but at a rate slower than productivity. Employment will decline as a result.
...	Federal Government enterprises, n.e.c.	Output will increase in response to demand for federally delivered services. Productivity will increase at a much faster rate than output, and as a result, employment will decrease significantly.
...	Federal general government	Output will increase slightly as the Federal Government continues to take responsibility for pressing issues such as public safety and security. Growth will be constrained by budgetary concerns, the growing use of private contractors, and the transfer of some functions to State and local governments. Productivity will remain unchanged, and employment will increase slightly as a result.
...	Local government passenger transit	Output will increase as more people use public transportation. The demand for mass-transit programs and initiatives will shape the industry. Productivity will decline, and employment will increase as a result.
...	State and local electric utilities	Output will increase in response to industry deregulation on the national level, which will spur State and local participation in some areas of the country. Productivity will increase at a slower rate than output, and employment will increase as a result.
...	State and local government enterprises	Output will increase in response to demand from consumers for such services as State liquor stores. Productivity will increase almost as fast as output, and employment will rise only slightly as a result.
...	State and local government hospitals	Output will increase as public hospitals provide safety-net services to trauma victims, the poor, and the uninsured. Productivity will increase at a slightly slower pace than output, resulting in minimal employment growth.

Table IV-2. Factors affecting industry output and employment, 2002-12—Continued

<i>NAICS code</i>	<i>Industry title</i>	<i>Factors affecting output and employment</i>
...	State and local government education	Output, which is measured as the compensation of government employees, will increase in response to demand for education and training by individuals of all ages. There will be no change in productivity, so employment will increase slightly faster than output.
...	State and local general government, n.e.c.	Output, which is measured as the compensation of government employees, will increase. Productivity will decrease slightly, so employment will rise at a slightly faster rate than output.

Table IV-3. Factors changing occupational utilization, 2002-12

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
11-1031	Legislators	Small decreases will occur in State and local government, excluding education and hospitals, to account for virtually no growth in the number of elected officials as other parts of government grow.
11-2011	Advertising and promotions managers	A moderate increase will occur in advertising and related services because of increasing global competition for the sale of goods and services and because more companies are expected to outsource their advertising to these agencies.
11-2021	Marketing managers	A moderate increase is expected in computer systems design and related services as these establishments promote their services and strive to broaden their client bases in a competitive marketplace. A small increase will result in advertising and related services from increased outsourcing of advertising work by other industries.
11-2022	Sales managers	Small to moderate increases are expected across all industries to manage increased marketing efforts.
11-2031	Public relations managers	A moderate increase is expected in advertising and related services as companies take a proactive approach to avoiding bad public relations, building trust in their products, and raising their visibility.
11-3011	Administrative services managers	A moderate increase is expected in management, scientific, and technical consulting services as firms in other industries increasingly utilize administrative management consulting services.
11-3021	Computer and information systems managers	Small increases are expected across all industries as firms continue to embrace new technologies and employ more computer specialists who must be managed.
11-3061	Purchasing managers	Small decreases are anticipated in most industries as electronic commerce increases productivity and allows for smaller staffs, resulting in a reduced need for managers.
11-9011	Farm, ranch, and other agricultural managers	Small increases are expected across all industries as corporate and absentee ownership increases demand for professional management.
11-9031	Education administrators, preschool and childcare center/program	A small increase is expected in local government educational services due to the expansion of formal preschool programs as fewer private households care for young children.
11-9033	Education administrators, postsecondary	The number of postsecondary school students is projected to grow more rapidly than other student populations, resulting in a small increase in private educational services.
11-9071	Gaming managers	A small increase will occur in traveler accommodation due to greater consumer interest in gambling and because growth in the average establishment size will result in a need for more management workers.
11-9081	Lodging managers	A small decrease is expected in traveler accommodation because extended-stay and economy-class establishments, which will account for an increasing share of lodging establishments, require a lower proportion of lodging managers.
11-9111	Medical and health services managers	The increasing complexity of physician practices and hospitals, a more stringent regulatory environment, and an increased reliance on managers for efficient and effective office operations will result in small increases in offices of physicians and public and private hospitals.
11-9141	Property, real estate, and community association managers	A small decrease in lessors of real estate and small to moderate increases in activities related to real estate and offices of real estate agents and brokers will result as real estate sales practices shift from individual owner-operators toward professional third-party management companies.
13-1022	Wholesale and retail buyers, except farm products	Small decreases will result in most industries as efficiency gains from electronic commerce allow customers to circumvent buyers and connect directly with business Web sites and with purchasing operations that are more centralized.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
13-1051	Cost estimators	Small increases are expected in nonresidential building construction, residential building construction, and utility system construction due to the continuing need to control costs and the increased complexity of estimating construction costs.
13-1061	Emergency management specialists	Small increases are expected in all industries as the demand for emergency-related services continues to rise.
13-1072	Compensation, benefits, and job analysis specialists	Small increases will occur across all industries to help implement legislative and court rulings on benefits and other employment matters.
13-1073	Training and development specialists	Small to moderate increases are expected in most industries as the rising complexity of jobs results in higher training requirements.
13-1111	Management analysts	A moderate increase is expected in management, scientific, and technical consulting services because regulations that restrict accounting firms from providing consulting services will result in more businesses seeking these services from traditional consulting firms. A moderate increase in Federal government will result as more management analysts are used to help streamline operations and reduce costs. A small increase is anticipated in computer systems design and related services as computer firms increase their consulting operations, especially in electronic commerce and technology management. A moderate increase in office administrative services will occur as more firms outsource the management of day-to-day business activities. A very large decrease is expected in accounting, tax preparation, bookkeeping, and payroll services because of new regulations that restrict accounting firms from providing consulting services.
13-1198	All other business operations specialists	Small increases will occur in all industries as companies seek to cut costs and increase efficiency.
13-2011	Accountants and auditors	A small increase is expected in accounting, tax preparation, bookkeeping, and payroll services as accounting firms focus more on their primary services and less on other services, such as consulting, as a result of accounting scandals. Moderate decreases are expected in Federal government and in State government, excluding education and hospitals, as accounting software increases efficiency and as governments outsource accounting services.
13-2051	Financial analysts	A small decrease is expected in securities and commodity contracts intermediation and brokerage as a result of industry consolidation. A moderate increase is expected in depository credit intermediation as a result of industry deregulation.
13-2052	Personal financial advisors	Moderate increases are expected in all industries as a result of growing demand for financial services, such as retirement planning, and because of industry deregulation, which allows insurance agents, stockbrokers, and bankers to offer a wider range of products.
13-2053	Insurance underwriters	A small decrease is anticipated in agencies, brokerages and other insurance activities as workers become more productive due to the implementation of underwriting software and information technology.
15-1021	Computer programmers	Small decreases across all industries are expected as establishments shift emphasis from programming to design, development, and analysis and due to the outsourcing of programming to other countries.
15-1031	Computer software engineers, applications	Small increases are expected across all industries due to increasing demand for computer applications software and specialized utility programs designed and developed to meet users' needs.
15-1032	Computer software engineers, systems software	Small to moderate increases are expected across all industries due to the continuing need to design and develop new operating systems-level software and network distribution software, as well as to the need to maintain current systems and insure information security.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
15-1051	Computer systems analysts	Small increases are expected across all industries due to increasing demand for new applications of technology, such as networking and systems integration.
15-1061	Database administrators	Small to moderate increases will result across all industries as the growing amount of information available requires more database administrators to store and administer data effectively and securely.
15-1071	Network and computer systems administrators	Small increases are expected across all industries as organizations develop and expand network, Internet, and Intranet systems and conduct more business electronically.
15-1081	Network systems and data communications analysts	Moderate increases are expected across all industries due to the continued expansion of the Internet, increasingly complex wired and wireless networks, firms' growing reliance on Web sites, and more emphasis overall on the security and protection of electronic information.
15-2021	Mathematicians	A small decrease is expected in all industries as other workers with mathematical backgrounds, but a wider range of skills—such as engineers, computer scientists, and physicists—perform work traditionally performed by mathematicians.
15-2031	Operations research analysts	A large decrease is expected in computer systems design and related services and data-processing, hosting, and related services as firms hire more computer scientists and systems analysts, who have a broader range of computer skills, rather than operations research analysts.
15-2041	Statisticians	Small decreases will result in all industries as improved statistical packages decrease the need for statisticians and as more statistical work is performed by workers with broader skills, such as engineers, computer scientists, and other scientists.
17-1021	Cartographers and photogrammetrists	A small increase is expected in architectural, engineering, and related services as these firms diversify and expand to include services such as cartography and photogrammetry.
17-2031	Biomedical engineers	Small increases are expected in all industries due to an aging population and increased emphasis on health issues, which will increase the need for sophisticated biomedical equipment.
17-2071	Electrical engineers	Small decreases are anticipated across most industries as engineering services are increasingly purchased from abroad.
17-2072	Electronics engineers, except computer	Small increases are expected in most industries as these workers continue to be at the forefront of developing and integrating new information and communication technologies.
17-2081	Environmental engineers	Moderate increases are expected in all industries due to increased demand for environmental-related engineering projects and as this occupation gains acceptance as a separate engineering discipline.
17-2112	Industrial engineers	Moderate increases are expected in motor vehicle and motor vehicle parts manufacturing due to an increased use of these workers to improve quality and productivity.
17-2141	Mechanical engineers	Small decreases are expected in most industries as engineering services are increasingly purchased from abroad.
17-3011	Architectural and civil drafters	Small decreases are expected across all industries, except architectural, engineering, and related services, as computer-aided design and drafting systems improve worker productivity.
17-3012	Electrical and electronics drafters	Small decreases will occur in all industries as computer-aided design and drafting systems improve worker productivity.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
17-3013	Mechanical drafters	Small decreases are expected across all industries as computer-aided design and drafting systems improve worker productivity.
17-3025	Environmental engineering technicians	Small increases are expected in all industries due to increased demand for environmental-related engineering projects and as this occupation gains acceptance as a separate occupation distinct from other engineering technicians.
17-3031	Surveying and mapping technicians	Small to moderate increases are expected in all industries as the demand increases for geographic information systems-related data-entry services.
19-1021	Biochemists and biophysicists	A moderate increase will occur in scientific research and development services, and a small increase will take place in pharmaceutical and medicine manufacturing, due to increased biotechnology-related research.
19-1022	Microbiologists	A moderate increase is expected in scientific research and development services, and small increases are anticipated in pharmaceutical and medicine manufacturing and Federal government, due to increased biotechnology-related research.
19-1029	Biological scientists, all other	Moderate increases are anticipated in scientific research and development services and in Federal government as the National Institute of Health's (NIH's) budget continues to grow, resulting in increased basic research and Federal grant money for drug development and design and for basic biological research.
19-1041	Epidemiologists	Small increases are expected in all industries due to a heightened awareness of bioterrorism and to infectious diseases increasing the need for epidemiological information.
19-1042	Medical scientists except epidemiologists	Small increases are expected in all industries due to budget increases for NIH that will translate into more basic medical research and development.
19-2031	Chemists	Small increases will result in scientific and research and development services, pharmaceutical and medicine manufacturing, and the Federal government as chemists become more heavily involved in drug research, design, and discovery.
19-2032	Materials scientists	A moderate increase will result in scientific research and development services as the chemical industry increasingly outsources work to firms that perform such services.
19-2041	Environmental scientists and specialists including health	Small increases will result in most industries due to a general heightened awareness regarding the need to monitor and improve the quality of the environment.
19-2042	Geoscientists, except hydrologists and geographers	As geoscientists perform more environmental audits and more site and risk assessments to meet environmental regulations, there will be a small increase in architectural, engineering, and related services.
19-2043	Hydrologists	Small increases are expected in Federal government and in architectural, engineering, and related services as more hydrologists are needed to evaluate issues related to water conservation, deteriorating coastal environments, rising sea levels, pollution control, and waste disposal.
19-4051	Nuclear technicians	A small decrease is expected in electric power generation, transmission, and distribution as the Nation's dependence on nuclear power as a source of energy decreases relative to its reliance on other sources of energy.
19-4091	Environmental science and protection technicians, including health	Due to increased emphasis on environmental issues, including the preservation of ecosystems, there will be a moderate increase across all industries.
19-4092	Forensic science technicians	Advances in forensics will increase the use of forensic science techniques to solve crimes, resulting in small increases in all industries.
19-4093	Forest and conservation technicians	A small decrease will occur in local government, excluding education and hospitals, as funding for forestry programs is expected to decrease in this industry.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
21-1013	Marriage and family therapists	Small decreases are expected in State and local government, excluding education and hospitals, as counseling services are increasingly outsourced.
21-1014	Mental health counselors	Small decreases are expected in State and local government, excluding education and hospitals, as counseling services are increasingly outsourced.
21-1015	Rehabilitation counselors	Small decreases are expected in State and local government, excluding education and hospitals, as counseling services are increasingly outsourced.
21-1022	Medical and public health social workers	There will be a small increase across most private healthcare and social assistance industries as a rapidly growing elderly population increases the demand for social services to coordinate the care of patients discharged from hospitals. Small decreases are expected in State and local government, excluding education and hospitals, due to governments increasingly outsourcing social work functions to private organizations and employing more social and human service assistants rather than social workers.
21-1023	Mental health and substance abuse social workers	Small increases are expected across most private healthcare and social assistance industries due to increasing demand for social services aimed at the mentally ill and at the prevention and treatment of substance abuse. There will be small decreases in State and local government, excluding education and hospitals, due to governments increasingly outsourcing social work functions to private organizations and employing more social and human service assistants rather than social workers.
21-1092	Probation officers and correctional treatment specialists	A small increase is expected in State government, excluding education and hospitals, due to the increasing number of offenders in prison and on parole and probation.
21-1093	Social and human service assistants	Small to moderate increases are expected across all industries, except State and local government, excluding education and hospitals, as a growing and aging population increases demand for social services and as establishments control costs by using more of these workers rather than social workers. Small decreases are expected in State and local governments, excluding education and hospitals, as governments increasingly outsource social work functions to private organizations.
21-2011	Clergy	A small decrease is expected in religious organizations as laypeople perform more duties and as religious organizations provide more social and educational activities.
23-1011	Lawyers	Large increases are expected in State and local government, excluding education and hospitals, as more lawyers are needed to prosecute a growing number of court cases and deal with a growing number of regulatory issues.
23-2011	Paralegals and legal assistants	Small increases are expected across all industries as firms increasingly substitute relatively lower cost paralegals and legal assistants for lawyers and law clerks.
23-2092	Law clerks	Small decreases are anticipated across all industries as firms replace law clerks with paralegals and legal assistants in an effort to contain the costs of delivering legal services.
23-2093	Title examiners, abstractors, and searchers	All industries are expected to experience moderate decreases as the increased use of electronic databases boosts productivity. In addition, many title examiners will be replaced by legal assistants.
25-1000	Postsecondary teachers	Small to moderate increases are expected in religious organizations and in State, local, and private educational services as the number of adult and college-aged students grows more rapidly than other student populations.
25-2011	Preschool teachers, except special education	Small increases are expected in local government educational services and religious organizations due to an expansion of formal preschool programs as fewer private households care for young children.

Table IV-3. Factors changing occupational utilization 2002-12--Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
25-2012	Kindergarten teachers, except special education	There will be a small increase in local government educational services, a moderate decrease in private educational services, and a small decrease in child daycare services as more States offer all-day kindergarten, causing a shift of employment from private educational services and child daycare centers into public elementary schools.
25-2021	Elementary school teachers, except special education	A moderate decrease is expected in private educational services as the number of elementary school students is projected to grow more slowly than other student populations in this industry.
25-2022	Middle school teachers, except special and vocational education	The number of middle school students is projected to grow more slowly than other student populations, resulting in a small decrease in local government educational services and a moderate decrease in private educational services.
25-2023	Vocational education teachers, middle school	A moderate decrease in private educational services and a small decrease in local government educational services are expected due to reduced funding for vocational education relative to funding for other areas of education.
25-2031	Secondary school teachers, except special and vocational education	A moderate decrease is anticipated in private educational services as the number of secondary school students is projected to grow more slowly than the postsecondary student population in this industry.
25-2032	Vocational education teachers, secondary school	Small to moderate decreases are expected in all industries as more emphasis is placed on academic achievement and accountability instead of vocational education.
25-2040	Special education teachers	A small increase is anticipated in local government educational services as an increasing number of students are classified as disabled.
25-3021	Self-enrichment education teachers	A rising trend toward lifelong learning is expected to spur small to moderate increases in almost all industries as the baby-boom generation enters retirement and has more leisure time to dedicate to self-enrichment.
25-4021	Librarians	Small to moderate decreases are expected in State, local, and private educational services as a result of the automation of library services and as libraries substitute more library technicians.
25-9021	Farm and home management advisors	Fewer farms and a shrinking farm population will result in small decreases in all industries.
25-9031	Instructional coordinators	A small increase is expected in private educational services due to changing curriculums. A small increase is expected in scientific research and development services due to an increased focus on improving education through research, as well as increasing Federal research funds.
27-1014	Multi-media artists and animators	A small increase is expected in newspaper, periodical, book, and directory publishers as firms retain multi-media artists and animators to generate more advertising revenue and improve the visual layout of their publications. A moderate decrease is anticipated in computer systems design and related services due to relatively faster growth in demand for hardware and software designers than for creative artists. A small decrease will occur in advertising and related services, an industry in which more workers are expected to work on a freelance or contract basis rather than as employees.
27-1022	Fashion designers	A moderate increase is expected in apparel, piece goods, and notions merchant wholesalers as wholesalers continue to expand their fashion design labels and enhance store branding by mass marketing clothing lines for distribution to their stores. A moderate increase is also expected in cut and sew apparel manufacturing as design work is retained while manufacturing moves offshore.
27-1024	Graphic designers	Moderate increases are expected in newspaper, periodical, book, and directory publishers, as well as in printing and related support activities, as graphic designers remain the principal creative talent for industry products and provide more graphics and visual images for Internet publications.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
27-1026	Merchandise displayers and window trimmers	A moderate decrease in advertising and related services and small decreases in other support services and management, scientific, and technical consulting services are expected as more of this work is performed by freelance designers who work on a project-by-project basis rather than as in-house staff.
27-1027	Set and exhibit designers	A small decrease is expected in performing arts companies as many set and exhibit designers switch from salaried jobs to contract or freelance positions.
27-1099	All other art and design workers	A small decrease in Federal government is anticipated due to the tendency to contract out functions that are not inherently governmental.
27-2011	Actors	A small decrease will occur in the motion picture and video industries as these industries become more diversified and rely more on contract performers rather than wage and salary employees.
27-2012	Producers and directors	A small decrease is expected in radio and television broadcasting as consolidation and nationalization lead to fewer on-air producers and directors of broadcasts and telecasts.
27-2031	Dancers	A small decrease will occur in performing arts companies, other amusement and recreation industries, and private educational services as dance is expected to become a smaller proportion of these industries.
27-2032	Choreographers	A small decrease is expected in State, local, and private educational services as tight budgets affect subject areas outside core courses.
27-3010	Announcers	Moderate decreases will occur in all industries as the radio industry consolidates, increases syndication, and improves technology.
27-3031	Public relations specialists	Small to moderate increases are expected in all industries as companies take a proactive approach to avoiding bad public relations, building trust in their products, and raising their visibility.
27-3041	Editors	Small decreases are expected in business, professional, labor, political, and similar organizations; radio and television broadcasting; advertising and related services; and State, local, and private educational services as more editorial work is done by managers and others or by freelance contractors.
27-3043	Writers and authors	Small decreases are expected in religious organizations; advertising and related services; and State, local, and private educational services as writing work is increasingly contracted out.
27-4013	Radio operators	Small to moderate decreases will result in all industries due to improvements in technology, especially the replacement of two-way radios with cell phones.
27-4021	Photographers	Small decreases are expected in newspaper, periodical, book, and directory publishers and other professional, scientific, and technical services as digital photography becomes less expensive and more widely available and enables individuals to produce and print their own photographs more easily.
29-1011	Chiropractors	A small decrease is expected in offices of other health practitioners as demand for chiropractic services will grow more slowly than demand for other healthcare services provided by this industry.
29-1020	Dentists	A moderate decrease is expected in offices of dentists as dentists hire more dental assistants and dental hygienists to perform routine tasks.
29-1031	Dietitians and nutritionists	A moderate decrease in nursing care facilities and a small decrease in State government, excluding education and hospitals, are expected as these industries continue to contract out services or substitute lower cost labor.
29-1041	Optometrists	A moderate decrease is expected in offices of other health practitioners because demand for optometric care will not increase as rapidly as demand for other healthcare services provided by the industry.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
29-1051	Pharmacists	Very large increases are expected in grocery, department, and other general merchandise stores because a rising proportion of these stores will have pharmacies. A moderate increase is expected in Federal government because more pharmacists will be needed to test the rising number of drugs and to help design and manage drug benefit plans for seniors. A moderate increase is expected in drugs and druggists' sundries merchant wholesalers because, as demand for cheaper medications rises, pharmacists will increasingly sell drugs at the wholesale level, especially to mail-order pharmacies.
29-1071	Physician assistants	A large increase is expected in public and private hospitals, and a small increase is anticipated in offices of physicians, as these cost-effective workers provide a growing proportion of services previously provided by physicians.
29-1081	Podiatrists	A moderate decrease is expected in offices of other health practitioners, and a small decrease is anticipated in offices of physicians, as the demand for other healthcare services provided by these industries increases more rapidly than demand for podiatric services.
29-1111	Registered nurses	Small increases are expected in nursing care facilities; offices of physicians; Federal government; outpatient care centers; and State, local, and private educational services due to sustained demand for high-quality healthcare, an aging population, increased regulation, and increases in health research.
29-1122	Occupational therapists	A moderate increase in nursing care facilities and small increases in offices of other health practitioners and in public and private hospitals are expected as a more active and independent elderly population demands more services.
29-1123	Physical therapists	Small increases are expected in nursing care facilities and in public and private hospitals as a growing and aging population demands more therapy services.
29-1124	Radiation therapists	Small increases are expected in offices of physicians and public and private hospitals as the result of increasing demand for therapy to meet the needs of an aging population.
29-1125	Recreational therapists	Small to moderate decreases are expected in most industries as cost-containment pressures limit the provision of recreational therapy services.
29-1126	Respiratory therapists	A moderate increase will result in public and private hospitals as the aging population leads to a higher incidence of heart and pulmonary diseases, boosting demand for respiratory therapists.
29-1127	Speech-language pathologists	Small increases are expected in nursing care facilities and in public and private hospitals as the incidence of speech and language disorders related to strokes and other age-related conditions rises with the growing elderly population.
29-2021	Dental hygienists	A small increase is expected in offices of dentists as dentists delegate more tasks to dental hygienists.
29-2031	Cardiovascular technologists and technicians	A moderate increase is expected in public and private hospitals as the demand for cardiovascular procedures increases due to an aging population that is more susceptible to heart disease.
29-2041	Emergency medical technicians and paramedics	A small increase is expected in local government, excluding education and hospitals, because these workers will be increasingly likely to work as paid professionals instead of volunteers.
29-2052	Pharmacy technicians	Large increases are expected in grocery, department, and other general merchandise stores because a rising proportion of these stores will have pharmacies. A small increase in health and personal care stores will result as pharmacy technicians increasingly take on routine tasks, such as counting pills and labeling containers.
29-2054	Respiratory therapy technicians	A moderate increase is expected in public and private hospitals as the aging population incurs a higher incidence of heart and pulmonary diseases, boosting demand for respiratory therapy technicians.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
29-2055	Surgical technologists	Small increases will result in offices of physicians and in public and private hospitals as cost-effective surgical technologists replace other personnel in the operating room.
29-2061	Licensed practical and licensed vocational nurses	Small decreases are expected in public and private hospitals, offices of physicians, and community care facilities as establishments substitute nursing or other health aides to provide nursing care.
29-2071	Medical records and health information technicians	A large increase in offices of physicians and small increases in nursing care facilities and public and private hospitals are expected as these establishments work to meet increasingly complex and demanding requirements for health information and insurance accountability.
29-2081	Opticians, dispensing	A moderate decrease is expected in offices of other health practitioners because demand for optometric care will not increase as rapidly as demand for other healthcare services provided by the industry.
31-1011	Home health aides	Moderate increases are anticipated in community care facilities for the elderly, nursing care facilities, and other residential care facilities as these facilities increasingly utilize home health aides to provide care for residents.
31-2011	Occupational therapist assistants	A moderate increase in offices of other health practitioners and a small increase in nursing care facilities will occur as a more active and independent elderly population demands more therapy services.
31-2012	Occupational therapist aides	Moderate increases will result in nursing care facilities and offices of other health practitioners as a more active and independent elderly population demands more therapy services.
31-2021	Physical therapist assistants	A moderate increase is expected in public and private hospitals, and small increases are anticipated in offices of other health practitioners and nursing care facilities, as a growing and aging population demands more therapy services.
31-2022	Physical therapist aides	A moderate increase in offices of other health practitioners, and small increases are anticipated in nursing care facilities and public and private hospitals, as a growing and aging population demands more therapy services.
31-9091	Dental assistants	A small increase in offices of dentists is expected as dentists continue to delegate routine tasks to dental assistants.
31-9092	Medical assistants	A moderate increase in offices of physicians, a large increase in public and private hospitals, and a small increase in offices of other health practitioners are expected as these flexible and relatively low cost workers are increasingly utilized.
31-9094	Medical transcriptionists	A small decrease is expected in public and private hospitals as more hospitals invest in speech-recognition and other technologies that allow for faster dissemination of medical reports and charts. These technologies will increase productivity and reduce the need for transcriptionists.
31-9096	Veterinary assistants and laboratory animal caretakers	A small decrease will result in other professional, scientific, and technical services as these workers are replaced by more highly skilled veterinary technicians and technologists.
33-1011	First-line supervisors/managers of correctional officers	A small increase is expected in Federal government as prisoner populations continue to rise. A small increase also is expected in State government, excluding education and hospitals, because State penal facilities tend to harbor criminals serving long sentences with little likelihood of parole.
33-1012	First-line supervisors/managers of police and detectives	Growth in the number of law-enforcement officers will result in moderate increases for Federal government and State government, excluding education and hospitals.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
33-1021	First-line supervisors/managers of firefighting and prevention workers	A small increase is expected in local government, excluding education and hospitals, as local governments assume an increasing amount of firefighting duties and as the number of paid professional firefighters increases.
33-2011	Firefighters	Small increases will result in State and local government, excluding education and hospitals, as more firefighting duties are delegated to State and local governments and as more firefighters become paid professionals.
33-3012	Correctional officers and jailers	A moderate increase is expected in State government, excluding education and hospitals, because State penal facilities tend to harbor criminals serving long sentences with little likelihood of parole. A moderate increase also is expected in Federal government as prisoner populations increase because of mandatory sentences with less likelihood of parole. A moderate increase is expected in facilities support services as these firms benefit from increased government outsourcing of correctional services.
33-3021	Detectives and criminal investigators	A large increase in Federal government and a small increase in State government, excluding education and hospitals, are expected due to the increasing need for improved intelligence and security.
33-3051	Police and sheriff's patrol officers	Small increases in State and local government, excluding education and hospitals, and a large increase in Federal government are expected as increasing emphasis is placed on public safety and security.
33-9021	Private detectives and investigators	A moderate increase in investigation and security services and small decreases in most other industries are expected as firms increasingly outsource investigative work.
35-1011	Chefs and head cooks	Small to moderate decreases are expected in limited-service eating places, traveler accommodation, other amusement and recreation industries, and drinking places (places that serve alcoholic beverages) as simplified menus reduce the demand for skilled chefs and head cooks. A small increase will result in special food services as the growing number of small establishments increases demand for chefs and head cooks.
35-1012	First-line supervisors/managers of food preparation and serving workers	Small to moderate decreases will occur in nursing care facilities; public and private hospitals; traveler accommodation; State, local, and private educational services; and other amusement and recreation industries as these establishments hire outside contractors to provide food services. Small increases are expected in special food services and grocery stores due to growing demand for catered, preprepared food and food service contractors.
35-2011	Cooks, fast food	A small decrease is expected in limited-service eating places due to the increased use of preprepared food. A small decrease is anticipated in full-service restaurants, where food preparation will require more skill than these workers typically possess.
35-2012	Cooks, institution and cafeteria	As establishments increasingly use outside contractors to provide food services, moderate decreases will result in all industries except special food services, in which a small increase is anticipated as these firms benefit from increased outsourcing by other industries.
35-2014	Cooks, restaurant	A moderate decrease is expected in other amusement and recreation industries because food service is not expected to grow as rapidly as other portions of the industry. A small decrease will occur in limited-service eating places as simplified menus reduce the demand for these workers.
35-2015	Cooks, short order	Small decreases are expected in full-service restaurants, limited-service eating places, and other amusement and recreation industries due to relatively slower growth in demand for short-order cooking.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
35-2021	Food preparation workers	A small increase is expected in full-service restaurants due to an increasing share of casual family-dining establishments that rely heavily on these workers. A moderate increase is expected in grocery stores as more prepared foods are offered as a convenience. Small to moderate decreases are expected in community care facilities for the elderly; public and private hospitals; nursing care facilities; and State, local, and private educational services as these establishments use outside contractors to provide food services.
35-3011	Bartenders	Small decreases will result in all industries, except drinking places (places that serve alcoholic beverages), as establishments eliminate full bar service.
35-3021	Combined food preparation and serving workers, including fast food	A small increase is expected in limited-service eating places as more work is done by workers who can combine steps and improve efficiency. A small decrease is expected in full-service restaurants because workers in this industry are more likely to be specialized.
35-3022	Counter attendants, cafeteria, food concession, and coffee shop	Small decreases are expected in traveler accommodation and in motion picture and video industries due to outsourcing. A small decrease will also occur in full-service restaurants due to the elimination of counter service.
35-3031	Waiters and waitresses	A small decrease is expected in traveler accommodation as these establishments use outside contractors to provide food services. A small decrease also is anticipated in limited-service eating places due to a reduction in table service.
35-3041	Food servers, nonrestaurant	Small decreases are anticipated in all industries as establishments use outside contractors to provide food services.
35-9011	Dining room and cafeteria attendants and bartender helpers	Small to moderate decreases are anticipated in all industries except full-service restaurants due to the contracting out of food services and relatively faster growth in less formal, more limited food services arrangements, which tend not to employ many in this occupation.
35-9031	Hosts and hostesses, restaurant, lounge, and coffee shop	A small decrease is expected in traveler accommodation as these establishments increasingly seek outside contractors to provide food services. A small decrease will result in limited-service eating places due to a reduction in table service arrangements that use these workers.
35-9098	All other food preparation and serving related workers	Small decreases are expected in State, local, and private educational services; traveler accommodation; nursing care facilities; and public and private hospitals as these establishments use outside contractors to provide food services. A small decrease in full-service restaurants is expected due to the trend to employ workers with more clearly defined duties.
37-2021	Pest control workers	A small decrease is expected in services to buildings and dwellings as technological advances increase worker productivity.
37-3011	Landscaping and groundskeeping workers	Increasing homeownership in subdivisions and complexes with common areas to maintain is expected to contribute to a small increase in services to buildings and dwellings.
37-3013	Tree trimmers and pruners	A small decrease is expected in local government, excluding education and hospitals, as work is increasingly contracted out.
37-9099	All other building and grounds cleaning and maintenance workers	A small decrease is expected in local government, excluding education and hospitals, as work is increasingly contracted out.
39-1011	Gaming supervisors	A small increase will result in traveler accommodation as the proportion of lodging establishments that offer gaming increases.
39-1012	Slot key persons	A small increase is expected in traveler accommodation as the proportion of lodging establishments that offer gaming increases.
39-3011	Gaming dealers	A small increase is expected in traveler accommodation as the proportion of lodging establishments that offer gaming increases.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
39-3012	Gaming and sports book writers and runners	A small increase is anticipated in traveler accommodation as the proportion of lodging establishments that offer gaming increases. A small increase will occur in spectator sports as gambling activities at these venues become more widespread.
39-3021	Motion picture projectionists	Moderate decreases are expected in all industries due to technology that allows projectionists to oversee multiple screens at the same time.
39-3031	Ushers, lobby attendants, and ticket takers	Small decreases are expected in all industries as technologies such as Internet and automated ticket purchasing diminish the need for these workers.
39-4021	Funeral attendants	A small increase is expected in death-care services due to the growing need for persons to assist funeral directors in the many tasks involved with funeral services, including helping individuals cope with their loss during the funeral.
39-5012	Hairdressers, hairstylists, and cosmetologists	A small decrease is expected in department stores as beauty shops become less prevalent in those stores.
39-6011	Baggage porters and bellhops	A small decrease will occur in traveler accommodation as economy and all-suite hotels grow in popularity compared with full-service hotels.
39-6032	Transportation attendants, except flight attendants and baggage porters	Small to moderate increases will result in scheduled air transportation and travel arrangement and reservation services as these workers are given more responsibility for safety and security.
39-9021	Personal and home care aides	A moderate increase is expected in individual and family services as demand for adult daycare and homemaker services grows. A small increase in private households is expected due to increasing demand for services from an aging population.
39-9031	Fitness trainers and aerobics instructors	A moderate increase is expected in other amusement and recreation industries due to a greater concern for health and fitness, resulting in the rapid growth of health clubs.
39-9099	Personal care and service workers, all other	Moderate increases are expected in civic and social organizations, individual and family services, nursing care facilities, vocational rehabilitation services, and community care facilities for the elderly as an aging population increases the need for adult daycare, homemaker, and other social services.
41-2022	Parts salespersons	Small to moderate decreases are expected in all industries due to increasing automation resulting from the use of the Internet, electronic commerce, and electronic data interchange.
41-3031	Securities, commodities, and financial services sales agents	A small decrease is expected in securities and commodity contracts intermediation and brokerage as the industry becomes more automated. A small increase is expected in depository credit intermediation due to industry deregulation, which allows securities, commodities, and financial services sales agents to offer a wider range of products.
41-3041	Travel agents	Small decreases are expected in all industries due to the automation of travel arrangement services and the increased use of the Internet for travel bookings.
41-9011	Demonstrators and product promoters	Small increases will occur across most industries, reflecting the increased use of demonstrations as an alternative or complement to other forms of marketing.
41-9012	Models	Small to moderate increases are expected across most industries as the increased volume of catalog and Internet sales requires more models to advertise merchandise.
41-9041	Telemarketers	Moderate decreases are expected in all industries as more people are given the opportunity to opt out of receiving telemarketing calls through no-call lists and the increased use of technology such as caller ID and devices that block calls.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
43-1011	First-line supervisors/managers of office and administrative support workers	Small decreases are expected in all industries as automation and technology increase the productivity of the workers of these supervisors, reducing the number of office and administrative support workers and hence the need for supervisors.
43-2011	Switchboard operators, including answering service	Small to moderate decreases are expected in all industries due to advances in voice recognition and other technologies.
43-2021	Telephone operators	Very large decreases are expected in all industries with the elimination of operator jobs due to automated information systems, voice-recognition technology, and the movement of operator jobs to other countries.
43-2099	All other communications equipment operators	Large decreases are expected in all industries with the elimination of jobs due to automated communications systems.
43-3011	Bill and account collectors	Small increases in all industries will occur as companies place greater emphasis on getting bills collected.
43-3021	Billing and posting clerks and machine operators	Automation will simplify the billing process, resulting in small decreases in all industries except accounting, tax preparation, bookkeeping, and payroll services—the industry in which companies are taking on the billing function as part of their services.
43-3031	Bookkeeping, accounting, and auditing clerks	Small decreases will result in all industries from the greater use of computers to simplify accounting processes.
43-3041	Gaming cage workers	Small decreases are expected in most industries due to the increased use of debitlike cards and other noncash payment mechanisms in place of cash.
43-3051	Payroll and timekeeping clerks	The implementation of automated timekeeping systems will result in small decreases in all industries except accounting, tax preparation, bookkeeping, and payroll services, which will benefit from outsourcing of payroll functions by other industries.
43-3061	Procurement clerks	The increased use of electronic commerce and the Internet to make purchases will result in small to moderate decreases in all industries.
43-4011	Brokerage clerks	Moderate to large decreases are expected in all industries due to growth of online trading.
43-4021	Correspondence clerks	Small to moderate decreases will occur across all industries due to productivity gains from the electronic handling of accounts and correspondence.
43-4041	Credit authorizers, checkers, and clerks	Moderate decreases will result in all industries as credit checking becomes highly automated, with new software that quickly analyzes credit histories.
43-4051	Customer service representatives	A small increase will result in depository credit intermediation as marketing and customer service play an increasing role at banks.
43-4061	Eligibility interviewers, government programs	Moderate decreases will occur in all industries as government programs, such as welfare, continue to be reformed and the role of government is decreased.
43-4071	File clerks	Moderate decreases are anticipated in all industries due to automation and the consolidation of recordkeeping functions.
43-4111	Interviewers, except eligibility and loan	A small increase is expected in public and private hospitals, as admitting clerks take on more functions.
43-4121	Library assistants, clerical	A small increase will result in local government, excluding education and hospitals, as library assistants take on tasks formerly performed by librarians.
43-4131	Loan interviewers and clerks	Moderate decreases will result in all industries as the process of applying and determining one's eligibility for a loan becomes increasingly automated and as simpler credit-scoring systems further reduce the need for personal followups.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
43-4151	Order clerks	Moderate decreases are expected in all industries except electronic shopping and mail-order houses as electronic commerce continues to expand and affect all transactions between consumers, businesses, and government, reducing the need for these clerks.
43-4171	Receptionists and information clerks	A small decrease is expected in offices of physicians due to the trend toward larger group practices, in which many practitioners share the services of one receptionist. An increasing number of independently operated beauty salons will result in a moderate increase in personal care services.
43-4181	Reservation and transportation ticket agents and travel clerks	A small decrease is expected in scheduled air transportation due to the increasing adoption of electronic ticketing and other technological advances.
43-4999	All other financial, information, and record clerks	Small decreases are anticipated in all industries due to increased automation of recordkeeping.
43-5011	Cargo and freight agents	Small decreases will result in most industries as technological improvements boost productivity.
43-5021	Couriers and messengers	Small to moderate decreases will occur in all industries. Despite an increasing volume of parcels and documents that must be handled and delivered as the economy expands, demand for these workers will continue to be adversely affected by the more widespread use of electronic information handling technologies such as e-mail and fax.
43-5032	Dispatchers, except police, fire, and ambulance	Small decreases will result in most industries due to the increased use of automated dispatching devices such as computers and global positioning systems.
43-5041	Meter readers, utilities	Moderate decreases are expected in all industries as automated meter-reading systems are increasingly used to improve productivity.
43-5053	Postal service mail sorters, processors, and processing machine operators	A small decrease is expected in the Postal Service due to the increasing automation of mail sorting.
43-5071	Shipping, receiving, and traffic clerks	Small decreases will result in all industries as increased automation, such as hand-held scanners and personal computers, boosts productivity.
43-5081	Stock clerks and order fillers	Small to moderate decreases are expected in all industries as the widespread use of computerized inventory control and other automated equipment improves productivity.
43-5199	All other material recording, scheduling, dispatching, and distributing workers	Moderate decreases will occur in all industries as the growing use of barcodes, scanners, and computerized recordkeeping software increases productivity.
43-6011	Executive secretaries and administrative assistants	Small decreases are anticipated across all industries due to the increased use of word-processing and other computer-related programs that allow other workers to do the work formerly done by these workers.
43-6013	Medical secretaries	Small decreases are anticipated across all industries due to the increased use of word-processing and other computer-related programs that allow other workers to do the work formerly done by these workers.
43-6014	Secretaries, except legal, medical, and executive	Moderate decreases are expected across all industries due to the adoption of word-processing and other computer-related programs that allow other workers to do the work formerly done by these workers.
43-9011	Computer operators	Moderate to large decreases will result across all industries due to the automation of systems and a shift in computer operation duties to other workers.
43-9021	Data entry keyers	Moderate to large decreases are expected in most industries due to the increased use of technology such as barcode scanners and voice- and character-recognition systems and because more data entry will be handled by other workers.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
43-9022	Word processors and typists	Very large decreases will result across all industries due to improvements in technology that allow other workers to perform these tasks.
43-9031	Desktop publishers	Moderate increases will occur across all industries due to improvements in technology that will continue to simplify the process of creating publication-ready material.
43-9041	Insurance claims and policy processing clerks	Small decreases are expected in all industries as computer technology boosts productivity.
43-9051	Mail clerks and mail machine operators, except postal service	Moderate decreases are expected across all industries as more communications are sent electronically.
43-9071	Office machine operators, except computer	Moderate decreases are anticipated across all industries as a result of computerization and easier-to-use technology that allow other workers to do the work formerly done by these workers.
43-9081	Proofreaders and copy markers	Small to moderate decreases are expected in all industries as proofreading software helps authors and writers proof their own work.
43-9111	Statistical assistants	Moderate decreases are expected across all industries as employers substitute workers with broader skills and as more powerful statistical software reduces the need for statistical assistants.
43-9999	All other secretaries, administrative assistants, and other office support workers	Moderate decreases will result in all industries from continuing automation that simplifies many of the tasks performed by these workers or allows other workers to do work previously done by these workers.
45-1000	Supervisors, farming, fishing, and forestry workers	Small increases are expected in crop and animal production, as these industries increasingly convert from independent farming to incorporated entities.
45-2091	Agricultural equipment operators	Small increases are expected in crop production and support activities for agriculture and forestry as an increasing number of farms are incorporated and less work is performed by self-employed farmers.
45-2093	Farmworkers, farm and ranch animals	A moderate increase is expected in animal production as an increasing number of farms are incorporated.
45-4011	Forest and conservation workers	A small decrease is expected in local government, excluding education and hospitals, as the result of local government budgetary constraints and a shift of work to State agencies.
47-2011	Boilermakers	Small decreases will occur across all industries due to the use of small boilers which generally require less assembly, and due to the assumption of some boilermaker duties by workers in other occupations.
47-2043	Floor sanders and finishers	A small decrease will result in all industries as the increased use of prefinished flooring replaces some sanded-in-place flooring.
47-2044	Tile and marble setters	Increased popularity of tiles and marble will result in small to moderate increases across all industries.
47-2051	Cement masons and concrete finishers	Small increases are expected across all industries due to increasing use of cement for its durability and strength.
47-2081	Drywall and ceiling tile installers	Small to moderate increases are expected across all industries due to occupational specialization taking away some of this work from carpenters and other construction workers, who sometimes do drywall and ceiling tile work.
47-2082	Tapers	Small increases are expected across all industries due to the increased use of occupational specialists to perform taping work previously performed by some carpenters and other construction workers.
47-2111	Electricians	Small to moderate increases are expected across all industries except building equipment contractors as new technologies increase the demand for electricians to install electrical-related technology and upgrade existing installations.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
47-2142	Paperhangers	A small decrease is expected in building finishing contractors as the demand for wallpapering is not likely to grow as rapidly as that for other services provided by the industry.
47-3011	Helpers—brickmasons, blockmasons, stonemasons and tile and marble setters	Small decreases will result across all industries due to more efficient building methods and the use of apprentices rather than helpers.
47-3015	Helpers—pipelayers, plumbers, pipefitters, and steamfitters	More efficient building methods and the use of apprentices rather than helpers will result in a small increase in building equipment contractors.
47-4011	Construction and building inspectors	A small increase will occur in architectural, engineering, and related services due to the increasing use of home inspectors in real estate transactions.
47-4041	Hazardous materials removal workers	A small increase is anticipated in all industries due to a growing awareness of hazardous materials—especially mold—and their effects, which will increase the demand for removal of these materials from the environment.
47-4061	Rail-track laying and maintenance equipment operators	Small decreases will result in all industries as improved tracklaying equipment boosts productivity.
47-5051	Rock splitters, quarry	A small increase is anticipated in nonmetallic mineral mining and quarrying as more of these workers are needed to extract stone and gravel to meet the growing needs of construction projects.
49-2011	Computer, automated teller, and office machine repairers	Small decreases are expected in most industries, as a result of increasing productivity and more reliable computers, automated teller machines, and other office equipment.
49-2021	Radio mechanics	Large decreases are expected in all industries as radio communications systems are replaced with cell-phone-based systems.
49-2022	Telecommunications equipment installers and repairers, except line installers	Small decreases are expected in most industries as technological improvements such as higher capacity switches and routers increase productivity.
49-2091	Avionics technicians	A small to moderate increase is expected in aerospace product and parts manufacturing as these firms increasingly perform repairs. A small decrease is expected in scheduled air transportation as these firms increasingly outsource repair work.
49-2092	Electric motor, power tool, and related repairers	Small decreases are expected in most industries due to improvements in electrical motor design that make motors more reliable and easier to repair.
49-2097	Electronic home entertainment equipment installers and repairers	Small decreases are expected in most industries, primarily as a result of the lower maintenance requirements of equipment with microelectronic circuitry.
49-3011	Aircraft mechanics and service technicians	Small decreases are expected in scheduled air transportation and Federal government as these industries increasingly outsource repair work. A small increase is expected in support activities for air transportation as these firms benefit from increased outsourcing by other industries. A moderate increase is expected in aerospace product and parts manufacturing as these firms increasingly perform repair work.
49-3023	Automotive service technicians and mechanics	A moderate increase is expected in automotive parts, accessories, and tire stores as these stores offer a broader array of automotive services, such as oil changes. A moderate decrease is expected in gasoline stations as they focus on other services, such as carwashes and convenience store amenities, rather than repair services.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
49-3031	Bus and truck mechanics and diesel engine specialists	Small decreases are expected in most industries as firms increasingly contract out repair services. However, a small increase is expected in automotive repair and maintenance as these shops provide more contract repair services. A small increase is also expected in motor vehicle and motor vehicle parts and supplies merchant wholesalers because an increasing number of diesel-trained mechanics and specialists will be needed to repair and tune the growing number of diesel-powered vehicles.
49-3043	Rail car repairers	A small decrease is expected in railroad transportation due to the consolidation of worker responsibilities.
49-9021	Heating, air-conditioning, and refrigeration mechanics and installers	Small to moderate increases are expected across all industries as maintenance, repair, and retrofitting of heating, air-conditioning, and ventilation equipment become higher priorities for customers due to unstable or increasing energy prices and greater energy consciousness.
49-9041	Industrial machinery mechanics	Small increases will result in all industries as technology is increasingly implemented in production facilities, thereby stimulating the demand for mechanics to install, repair, and maintain machinery.
49-9061	Camera and photographic equipment repairers	Moderate decreases will occur in all industries as digital camera technology improves and prices of new cameras fall, making more cameras cheaper to replace than repair.
49-9063	Musical instrument repairers and tuners	A small decrease is expected in sporting good, hobby, and musical instrument stores because growth in demand for musical instruments will remain closely tied to population growth.
49-9064	Watch repairers	A small decrease is expected in jewelry, luggage, and leather goods stores because most watches are not worth repairing.
49-9091	Coin, vending, and amusement machine servicers and repairers	A moderate increase is expected in grocery and related product wholesalers as consumers increasingly prefer the convenience of coin-operated vending machines. A small increase is expected in other amusement and recreation industries in response to increasing demand for coin-operated vending and amusement machines.
49-9095	Manufactured building and mobile installers	Increasing sales of manufactured and mobile homes relative to standard housing will result in small increases across all industries.
51-2021	Coil winders, tapers, and finishers	Small to moderate decreases will result in all industries as other technologies replace coils and as more productive equipment is introduced.
51-2022	Electrical and electronic equipment assemblers	Small to moderate decreases are expected in all industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-2023	Electromechanical equipment assemblers	Small decreases are anticipated in all industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-2031	Engine and other machine assemblers	Small decreases are anticipated in all industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-2041	Structural metal fabricators and fitters	Small decreases will result in most industries as more efficient equipment and manufacturing processes are used and strong foreign competition persists.
51-2092	Team assemblers	Small decreases will result in all industries as more efficient equipment and manufacturing processes are used and strong foreign competition persists.
51-2099	All other assemblers and fabricators	Moderate decreases will occur in all industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-3021	Butchers and meat cutters	A moderate decrease in grocery stores and a small decrease in specialty food stores are expected as more retail stores buy prepackaged meats.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic	Small decreases will result in most industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-4022	Forging machine setters, operators, and tenders, metal and plastic	Small decreases will occur in all industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-4052	Pourers and casters, metal	Small decreases will result in all industries as more efficient equipment and manufacturing processes are used and strong foreign competition persists.
51-4111	Tool and die makers	Small decreases will result in all industries due to advances in automation, including CNC machine tools and computer-aided design, that will increase productivity.
51-4194	Tool grinders, filers, and sharpeners	Small to moderate decreases are expected in all industries due to the increasing use of replaceable cutting tools.
51-4199	All other metal workers and plastic workers	Small decreases are expected in most industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-5011	Bindery workers	Small to moderate decreases are expected in most industries as bindery work is shifted to printing press operators.
51-5022	Prepress technicians and workers	Small to moderate decreases will occur in all industries as digital technology increases efficiency and allows much of this work to be done by clients.
51-6011	Laundry and dry-cleaning workers	Small decreases are expected in nursing care facilities and in public and private hospitals as these industries increasingly outsource laundry services.
51-6041	Shoe and leather workers and repairers	A small decrease is expected in other leather and allied product manufacturing as people increasingly prefer to buy relatively cheap new shoes instead of repairing old shoes.
51-6042	Shoe machine operators and tenders	Increasing offshore production and rising imports will lead to a small decrease in all industries.
51-6052	Tailors, dressmakers, and custom sewers	Small to moderate decreases will occur in most industries as customers continue to purchase new, ready-to-wear items instead of having older clothes altered, repaired, or made from scratch.
51-6062	Textile cutting machine setters, operators, and tenders	Advances in production technology will increase productivity, resulting in small decreases in most industries.
51-6091	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers	A small increase will occur in fiber, yarn, and thread mills due to increasing demand for synthetic fiber relative to other fibers.
51-6092	Fabric and apparel patternmakers	A small decrease is expected in cut and sew apparel manufacturing due to increased productivity in patternmaking by using computer-aided design.
51-6093	Upholsterers	As manufacturers become more automated and efficient in producing furniture and automotive seat coverings that are more durable, moderate decreases will occur across all industries.
51-7040	Woodworking, machine setters, operators, and tenders, except sawing	Small decreases are expected in all industries due to the introduction of more efficient machinery and manufacturing processes.
51-7041	Sawing machine setters, operators, and tenders, wood	Small decreases are expected in all industries due to the introduction of more productive higher capacity machinery.
51-7099	All other woodworkers	Small decreases will result in all industries due to the introduction of more productive machinery and manufacturing processes.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
51-8012	Power distributors and dispatchers	A small decrease is expected in local government, excluding education and hospitals, as the result of increasing automation.
51-8021	Stationary engineers and boiler operators	A small decrease is expected in most industries. Although commercial and industrial development will increase the number of systems to monitor and maintain, increased automation will boost worker productivity.
51-8031	Water and liquid waste treatment plant and system operators	A moderate increase is expected in water, sewage, and other systems as Federal guidelines on operator certification cause many existing and new small communities to contract out plant operations to firms in this sector.
51-8092	Gas plant operators	Moderate to large increases are expected in natural-gas distribution, the pipeline transportation of natural gas, and electric power generation, transmission and distribution as automation decreases the need for other workers in these industries. There is usually only one plant operator per facility, so it is not often possible to eliminate gas plant operators.
51-9021	Crushing, grinding, and polishing machine setters, operators, and tenders	Small decreases are expected in most industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-9023	Mixing and blending machine setters, operators, and tenders	Small decreases are expected in most industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-9041	Extruding, forming, pressing, and compacting machine setters, operators, and tenders	Small decreases are expected in most industries as more productive equipment and manufacturing processes are used and strong foreign competition persists.
51-9061	Inspectors, testers, sorters, samplers, and weighers	Small decreases are anticipated in most industries as production workers increasingly perform quality inspections in addition to their other duties.
51-9071	Jewelers and precious stone and metal workers	A small increase will occur in other miscellaneous manufacturing. While some technological advances have rendered jewelrymaking more efficient, many tasks cannot be fully automated.
51-9081	Dental laboratory technicians	A moderate decrease is expected in offices of dentists as more work is contracted out to dental laboratories.
51-9083	Ophthalmic laboratory technicians	Small to moderate decreases are expected in offices of other health practitioners, employment services, and health and personal care stores due to increased automation of lensmaking machinery, which boosts productivity.
51-9131	Photographic process workers	Small decreases are expected in all industries as digital technology makes it easier for individuals to print, copy, and alter photographs with the use of personal computers and equipment.
51-9132	Photographic processing machine operators	Small decreases are expected in all industries as digital technology makes it easier for individuals to print, copy, and alter photographs with the use of personal computers and equipment.
51-9198	Helpers—production workers	Small decreases are expected in most industries as more efficient equipment and manufacturing processes are used and strong foreign competition persists.
53-2011	Airline pilots, copilots, and flight engineers	A moderate increase is expected in couriers because of increasing security requirements for shipping freight on scheduled air carriers.
53-2021	Air traffic controllers	A small increase is expected in Federal government due to an anticipated increase in commercial aircraft traffic.
53-3011	Ambulance drivers and attendants, except emergency medical technicians	A moderate decrease is expected in other ambulatory healthcare services because these workers are concentrated in a portion of the industry that will not grow as rapidly as the rest of the industry.

Table IV-3. Factors changing occupational utilization 2002-12—Continued

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors changing occupational utilization</i>
53-3031	Driver/sales workers	Small decreases are expected across most industries as companies increasingly shift sales, ordering, and customer service tasks to sales and office staffs and use regular truck drivers to make deliveries to customers.
53-4021	Railroad brake, signal, and switch operators	Moderate decreases are expected in all industries due to technological improvements and the consolidation of job responsibilities.
53-4039	Subway, streetcar operators and all other rail transportation workers	A moderate increase is expected in rail transportation due to increasing demand for passenger rail transit in many municipalities.
53-6031	Service station attendants	Small decreases will result in all industries due to the continued shift to self-service.
53-7051	Industrial truck and tractor operators	Small decreases are expected in most industries due to the growing automation of material handling in factories and warehouses.
53-7061	Cleaners of vehicles and equipment	Small decreases will result in all industries from technological improvements in cleaning equipment that raise productivity.
53-7062	Laborers and freight, stock, and material movers, hand	Small to moderate decreases are expected in all industries due to automation and advances in material-moving machinery and equipment.
53-7063	Machine feeders and offbearers	Small decreases are expected in most industries due to the automation of machine-tending tasks.
53-7081	Refuse and recyclable material collectors	A small decrease is expected in local government, excluding education and hospitals, due to the increased outsourcing of refuse collection to independent contractors.
53-7111	Shuttle car operators	The increased use of technology, such as conveyor belts that reduce the need for shuttle cars, will lead to a small decrease in coal mining.
53-7199	Material moving workers, all other	Small decreases are anticipated in most industries due to more productive material-handling machinery and procedures.

Chapter V. Estimating Occupational Replacement Needs

Information about projected job openings by occupation—openings resulting from employment growth or the need to replace workers who leave an occupation—has many important applications. For example, students and vocational counselors use this kind of information to make career choice decisions, planners of training programs use it to develop education policies, and personnel specialists use it to plan their recruiting efforts. The Bureau of Labor Statistics (BLS) has provided information on employment growth biennially through its occupational outlook program for more than 50 years. In 1992, the Bureau resumed estimating job openings resulting from replacement needs.

After completing a comprehensive research effort, BLS analysts concluded that two definitions and two estimates of separations were needed to provide appropriate information on replacement needs for different users. The first type of estimate, *total separations*, measures all individuals who leave their occupation. The second, *net separations*, measures the net movements of new and experienced workers into and out of occupations. Both measures of separations use data from the Current Population Survey (CPS). After developing historical total and net separation rates, the Bureau calculates projected total and net replacement rates in order to estimate future total and net replacement needs for each occupation in the national employment matrix.

Concepts and definitions

During the past several decades, a variety of concepts has been used to calculate estimates of occupational replacement needs, a component of job openings. These different concepts result in significantly different estimates of separations for the same occupation that often have confused users of the information. This section briefly summarizes the concepts currently used by the Bureau to calculate replacement needs. Figure 1 illustrates the differences between total and net separations. For each age group, the figure shows total and net occupational entrants and separations between February 1999 and February 2000. Younger age groups exhibit an excess of total entrants over total separations as a larger number of young persons begin working in an occupation than leave one. This excess is referred to as *net entrants*. Likewise, the excess of total separations over total entrants in older age groups is referred to as *net separations*.

Total separations. Total separations identify the flow of individuals leaving an occupation, for any reason whatsoever, without regard to persons entering the occupation. Total separations are the larger measure of separations. During a given period, individuals may leave an occupation

for a variety of reasons. Some become employed in a different occupation as a result of a promotion; a desire to change careers; the loss of an existing job; the need for a different job while attending school, while training, or while caring for one's family; or some other reason. Others who leave an occupation stop working altogether because they retire, desire more time for leisure or for an extended vacation, assume family responsibilities, return to school, move out of a particular geographic area, become ill, or have some other reason for leaving. If employment in an occupation is to increase or remain the same, those individuals who left the occupation must be replaced. In this case, total occupational separations are the replacement needs. If employment is declining, however, occupational separations exceed replacement needs by the amount of decline in employment, because some persons who leave the occupation are not replaced. (Individuals who change employers, but remain employed in the same occupation—the sum of which events often are referred to as “turn-over”—are not included in counts of replacement needs, because job changes by these individuals have no impact on the number of openings for persons wishing to enter an occupation.)

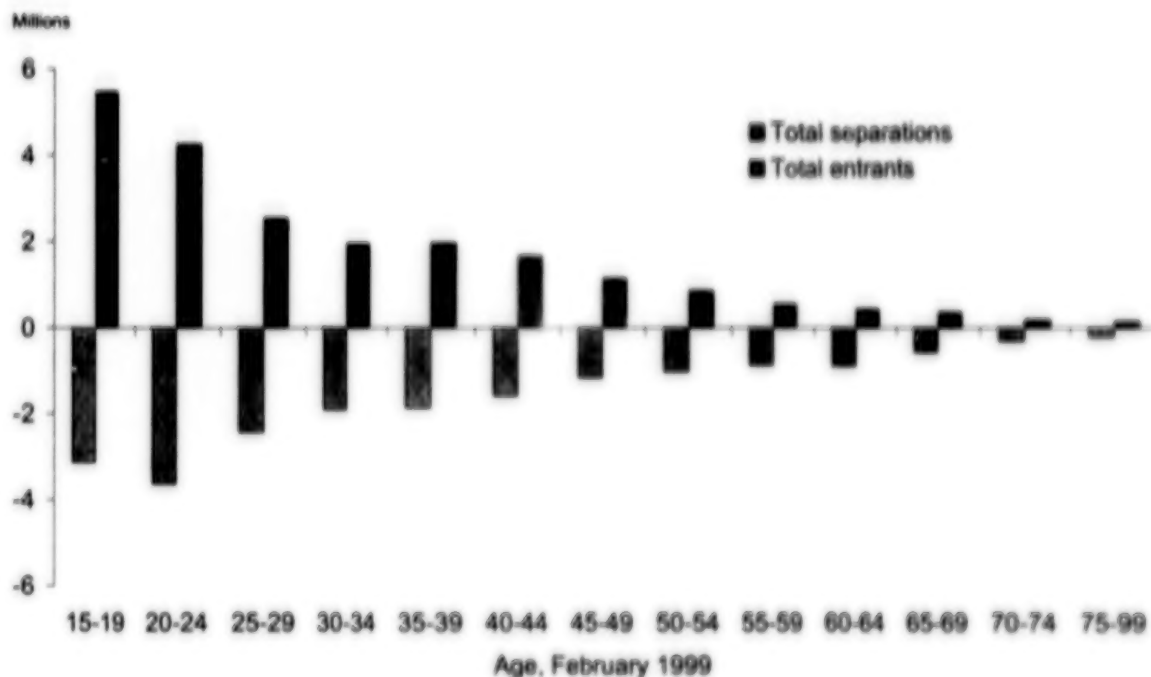
Net separations. Net separations summarize movements of workers into and out of an occupation over a specific period. If employment is not declining, net separations approximate the number of persons who permanently leave an occupation: net separations quantify the need for new entrants and, if training is required, identify minimum training requirements.

Employment data, by age, at two points in time are used to estimate net separations. For example, occupational employment, by age, is prepared for a base year and for 5 years later. Employment figures for each age group in the base year are then compared with employment figures for the group that is 5 years older. For instance, in a given occupation, employment in the base year for the 55- to 59-year-old group is compared with employment 5 years later for the 60- to 64-year-old group. If employment has increased from the base-year age group to the 5-year-older age group, then the increase measures net entrants into the occupation for the latter group, and net separations from the occupation for that age group are zero. If, instead, employment has declined from the base-year age group to the 5-year-older age group, the decline is recorded as net separations from that occupation for the latter group. The total net separations from the occupation in question are then the sum of the net separations from that occupation for all age groups.

Figure 1. Total and net occupational entrants and separations, February 1999 to February 2000

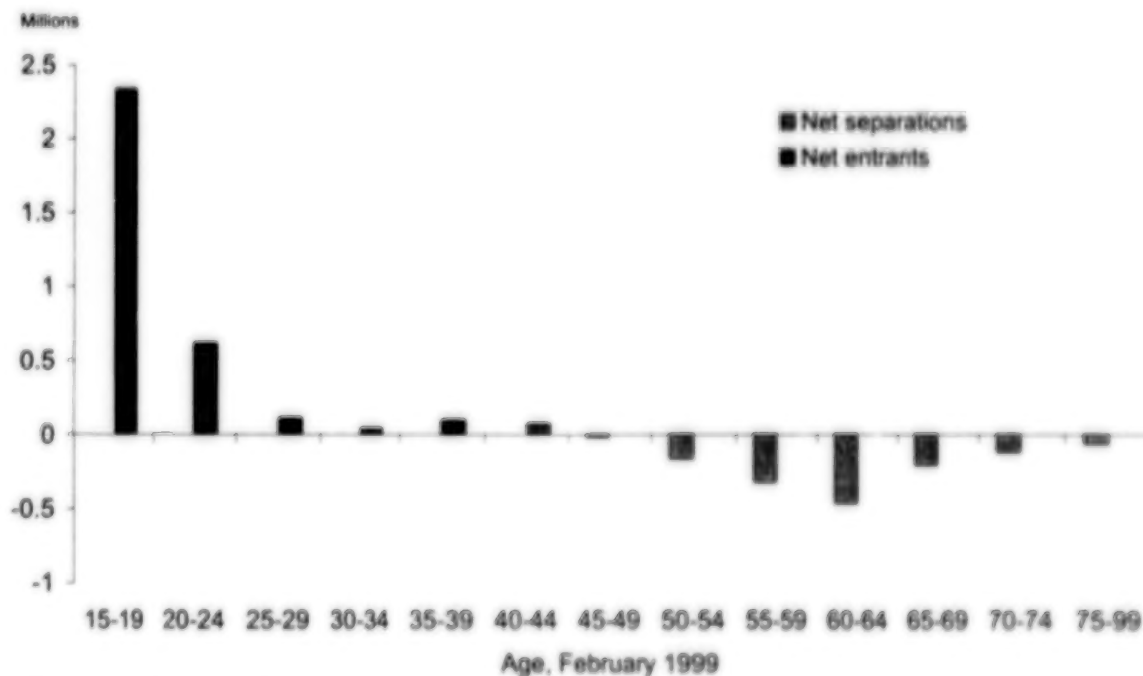
Total separations:

- Occur in all age groups
- Are independent of the total number of entrants
- Identify all of the normal movements out of occupations



Net separations:

- Occur only when total separations exceed total entrants within an age group
- For an occupation, are the sum of separations for each age group
- Exclude information about net entrants



It is important to note that, within any age group, individuals may have done any of the following to stop being included in employment data for a particular geographic area: Left the occupation in question and started working in another occupation, stopped working altogether, or left the area. Similarly, individuals entering an occupation in a geographic area may have been working in another occupation, may not have been working at all, or may have come from another area. The change, measured over the period in question, thus reveals only whether there were more or fewer entrants than separations and tells nothing about the numbers of total entrants, total separations, or any of their components. That is, the change indicates whether the size of the original age group increased or decreased, but it indicates nothing about the specific actions of individuals making up the group.

Replacement needs. In developing estimates of replacement needs, the distinction between separations and replacement needs must not be overlooked. When employment in an occupation remains the same or increases over a given period, replacement needs equal separations. When employment declines, replacement needs are less than separations because some individuals leaving an occupation are not replaced.

During a period when employment in an occupation declines, total separations will be greater than they would be if employment were increasing, because more individuals lose their jobs. Net separations would be greater not only because more individuals leave, but also because fewer enter the occupation. A decline in employment represents individuals who left an occupation and were not replaced; therefore, replacement needs during a time of declining employment are determined by reducing observed separations by the decline in employment.

Although it is conceivable that employment could decline to zero, the possibility is remote, especially with national data. In such an unlikely scenario, separations would equal the previous number of employees, because all lost their jobs, and replacement needs would be zero (replacement needs = separations - employment decline = 0). During periods of employment decline, displaced workers are available to reenter the occupation later and thus may reduce the need to train additional workers.

Developing measures of total separations

All individuals who leave an occupation—those who transfer to another occupation or who stop working for any reason—must be included in a measure of total separations. Producing such a measure requires longitudinal data that include information about individuals at two points in time. During the late 1970s, BLS researchers developed a procedure for using CPS data to estimate the number of job openings arising from workers who leave their occupation between two points in time that are 1 year apart. Annual data are preferable to data with other periodicities because most data on the completion of training programs are compiled

on an annual basis. Annual total separation data thus facilitate analyses of occupational supply and demand.

The method of measuring total separations entailed using computer records to track the same individuals in the CPS over a 1-year period. Monthly data from August 2000 to July 2002 were assembled, and data for each of the first 12 months were matched to data for the same month 1 year later. For example, monthly data for August 2000 were matched with monthly data for the same individual in August 2001. The use of data from the matched sample permitted changes in an individual's employment status and occupation to be tabulated.

Over time, individuals may respond differently to the same CPS question about their occupation, responses may be recorded differently by interviewers collecting the data, or recorded information may be interpreted and coded differently by persons preparing files for computer processing. All these actions result in a different occupation being recorded in the second year when, in fact, no change of occupation occurred. Data on January 2001-02 occupational transfers from the January 2002 CPS supplement were used to rectify this overestimation of occupational transfers in matched CPS data.

Combining 2001-02 matched CPS data and occupational transfer data from the January 2002 CPS supplement yields *merged data* that provide a composite description of movements into, out of, and between occupations over two points that are 1 year apart. The resulting merged data identify the numbers and types of separations and the characteristics of workers who change occupations, become unemployed, or leave the labor force.

Data on total separations for occupations with fewer than 50,000 employees were judged unreliable because of the limited number of observations in the sample. Data for the remaining occupations were examined individually, and if data identifying specific reasons for leaving the occupation appeared suspect, another detailed occupational group was selected to serve as a proxy and provide substitute data.

The CPS is conducted primarily to obtain current data on the labor force status of individuals, rather than data that measure changes over time. As a result, there are significant limitations to the data that describe change. The CPS is a household survey that collects data from persons living at specific addresses. One limitation to the matched sample is that information can be developed only from the responses of individuals who do not change their residence. Movers tend to change their labor force status more than do non-movers; hence, the separation rates are biased downward because movers are not included. Separation rates also are biased downward because the CPS excludes individuals who die between surveys.

By contrast, response and coding errors bias the separation rates upward. For example, if employed persons were incorrectly classified as not being in the labor force during the second survey, the matched data would indicate movement where none occurred. Although the net effect of

the various biases on the movements is not known, their impacts appear to be offsetting and are not concentrated by occupation.

It must be emphasized that total separation rates developed from merged CPS data are not measured rates based on longitudinal data about individuals, but rather are a composite estimate of movements from occupations based on CPS data from two distinct sources. However, the rates are occupation specific and are extremely valuable for describing the labor market.

Developing measures of net separations

Changes in age groups over a 5-year period provide a comprehensive measure of occupation-specific net separations. When the size of a group increases, a measure of net entrants is recorded; when the group's size declines, net separations are identified. Net changes in an age group capture the net effect of transfers into and out of occupations, immigration, and emigration, as well as labor force entries and separations, including deaths. A 5-year period was chosen to reduce the impact of cyclical variations that might affect comparisons made over a shorter period. Estimates for other periods can be developed, however. Estimates also can be developed for industry, educational level, sex, and a variety of other demographic variables. This new "cohort" technique thus becomes a powerful tool for analyzing labor market changes.

Employment estimates for appropriate age groups, by occupation, were developed for 1993-98, 1994-99, 1995-2000, 1996-2001, and 1997-2002. Initially, several hundred thousand records containing information on occupation, age, and many other characteristics for all employed persons in 1993 were combined, and occupational employment by age group was tabulated. The process was repeated to obtain estimates for desired age groups in 1998. To increase the sample size and reduce cyclical fluctuations, estimates for the age groups for which 1993 employment was tabulated also were developed for 1994, 1995, 1996, and 1997, and estimates for the age groups used in

Table V-1. Net separations for registered nurses and for waiters and waitresses, by age group, 1997-2002

(Numbers in thousands)

1997 employment ¹		2002 employment ²		Net change, 1997-2002	Net separations, 1997-2002	Separation rate, 1997-2002 (percent)
Age	Number	Age	Number			
Registered nurses						
16-99.....	1,971	—	2,145	174	151	7.7
16-19.....	1	16-20.....	1			
20-24.....	67	21-24.....	57	56	0	0
25-29.....	202	25-29.....	204	137	0	0
30-34.....	286	30-34.....	257	55	0	0
35-39.....	368	35-39.....	324	38	0	0
40-44.....	385	40-44.....	406	38	0	0
45-49.....	277	45-49.....	371	-14	14	3.7
50-54.....	182	50-54.....	254	-23	23	8.3
55-59.....	115	55-59.....	150	-31	31	17.2
60-64.....	61	60-64.....	82	-33	33	28.7
65-69.....	19	65-69.....	25	-36	36	59.6
70-74.....	8	70-74.....	9	-10	10	52.1
75-99.....	2	75-99.....	3	-3	3	52.4
		80-99.....	1	-1	1	33.1
Waiters and waitresses						
16-99.....	1,410	—	1,408	-2	452	32.0
16-19.....	263	16-20.....	377	377		
20-24.....	402	21-24.....	311	48	0	0
25-29.....	212	25-29.....	191	-211	211	52.7
30-34.....	172	30-34.....	121	-91	91	42.8
35-39.....	133	35-39.....	120	-52	52	30.0
40-44.....	79	40-44.....	96	-37	37	27.8
45-49.....	52	45-49.....	62	-17	17	21.0
50-54.....	39	50-54.....	43	-9	9	16.8
55-59.....	25	55-59.....	26	-14	14	34.8
60-64.....	22	60-64.....	20	-5	5	20.1
65-69.....	8	65-69.....	10	-12	12	56.5
70-74.....	3	70-74.....	6	-2	2	22.6
75-99.....	2	75-99.....	1	-1	1	49.6
		80-99.....	1	-1	1	69.1

¹1997 data are averages of 1993, 1994, 1995, 1996, and 1997.

²2002 data are averages of 1998, 1999, 2000, 2001, and 2002.

1998 were developed for 1999, 2000, 2001, and 2002. Data on employment by occupation, by age group, were then averaged and used to prepare the estimates presented in this chapter. To simplify the presentation, all references to 1997 data represent averages for 1993, 1994, 1995, 1996, and 1997, and references to 2002 data represent averages for 1998, 1999, 2000, 2001, and 2002.

In most occupations, net leavers occur only in the older age groups, usually above age 45. This pattern typically describes individuals leaving in large numbers to retire. A different pattern displayed in some occupations is the vast majority of all net separations taking place in the youngest age groups. In this case, large numbers of workers probably obtained employment in the occupation when they first entered the workforce. Then, when they were ready to begin full-time jobs, or when they qualified for higher paying jobs, they transferred to another occupation. In both patterns, the net separations quantify the number of persons who permanently left the occupation. Table V-1 shows

Table V-2. Net separations in selected teaching occupations, by age group, 1997-2002

(Numbers in thousands)

Current Population Survey occupation	Number employed, 1997 ¹	Age group													
		16 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 99	
Teachers, except college and university.....	4,556	0	0	0	0	0	0	13	100	101	64	23	7	7	
Teachers, prekindergarten and kindergarten..	526	0	0	0	0	0	2	0	2	4	6	2	1	2	
Teachers, elementary school.....	1,750	0	0	0	0	0	0	13	47	42	28	7	1	2	
Teachers, secondary school.....	1,214	0	0	0	0	0	0	18	51	42	18	6	1	1	
Teachers, special education.....	326	0	0	2	2	0	0	3	8	8	4	1	0	0	
Teachers, n.e.c. ²	740	0	0	0	0	0	0	0	0	5	8	7	4	3	

¹ 1997 data are averages of 1993, 1994, 1995, 1996, and 1997.² n.e.c. = not elsewhere classified.

these different patterns and illustrates how net separations for registered nurses and for waiters and waitresses were calculated.

In table V-1, employment data by age group for registered nurses and for waiters and waitresses in 1997 are compared with corresponding data for a 5-year-older group in 2002. For example, the number of registered nurses aged 20 to 24 in 1997 is compared with the number of registered nurses aged 25 to 29 in 2002, and the difference is calculated. If the difference is positive, more individuals aged 20 to 24 in 1997 entered than left the occupation. Nothing is known about the numbers of persons transferring into the occupation, entering the labor force, immigrating from another country, transferring out of the occupation, leaving the labor force, or leaving the United States. The difference between the two groups simply identifies the amount by which total entrants exceed total leavers. If, by contrast, the difference is negative, more individuals left than entered the occupation. Only a negative difference results in a measure of net separations; positive differences are recorded as zero net separations for the age group. The separation rate for an age group is calculated by dividing net separations by 1997 employment in the age group. Net separations for all age groups were totaled and divided by total employment in 1997 to obtain the 5-year net separation rate for the occupation.

Table V-1 also presents information on the percentage of leavers in each age group for registered nurses and for waiters and waitresses. This measure is calculated by dividing net leavers in the age group by 1997 employment for that age group. Information about the percentage of leavers in each age group is valuable because it permits estimates of net leavers in the future, a topic that will be discussed later.

Because registered nurses and waiters and waitresses are large occupations, the CPS sample provides quite reliable employment data for each age group within them. However, for small occupations, such as actuaries, the sample is too sparse and the net separation data are unreliable. For example, actuaries have an irregular distribution of net separations among the age groups, and the net separation rate of about 19 percent is inconsistent with rates for other professional and related occupations.

To obtain a separation rate for each detailed CPS occu-

pation, one of two procedures was used when data for an occupation were judged unreliable. When a large, detailed occupation had characteristics similar to those of the occupation in question, the larger occupation was chosen as a proxy, and the separation and employment data for the proxy occupation were substituted for the unreliable data and were used to calculate separation rates. When there was no larger detailed occupation with characteristics similar to those of the occupation in question, separation and employment data for a summary occupation group were substituted for the unreliable data.

The procedure for determining separation rates for summary occupations, however, was not as straightforward as that for detailed occupations. Note that, in table V-2, no net separations are measured for the summary occupation group teachers, except college and university, until age 45. Yet, two of the detailed occupations that make up the group—prekindergarten and kindergarten teachers and special-education teachers—exhibit net separations prior to that age. The summary occupation group does not register those separations because total net entrants in the other detailed occupations constituting the summary occupation group exceeded the total of net separations among prekindergarten and kindergarten teachers or special-education teachers in the relevant age group. To exclude the measure of net separations from the summary occupation group, however, would result in an understatement of separations from detailed occupations. To overcome this limitation, net separations in each age group for summary occupations were calculated by totaling the net separations for each detailed occupation in that age group. Thus, in table V-3, the net separation data for each age group in the summary occupation group teachers, except college and university, is the sum of the data measured for prekindergarten and kindergarten teachers, elementary school teachers, secondary school teachers, special-education teachers, and teachers not elsewhere classified. (The totals shown may not be the sum of the data for detailed occupations due to rounding.)

Projected replacement rates

Thus far, all information presented about separations has been descriptive and retrospective; that is, it has described what occurred in the past. The BLS employment projections program, however, focuses on future opportunities, a pur-

Table V-3. Net separations in selected teaching occupations, adjusted summary occupation, by age group, 1997-2002
(Numbers in thousands)

Current Population Survey Occupation	Number employed, 1997 ¹	Age group													
		16 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 99	
Teachers, except college and university.....	4,556	0	0	2	2	0	2	35	108	101	64	22	7	8	
Teachers, prekindergarten and kindergarten..	526	0	0	0	0	0	2	0	2	4	6	2	1	2	
Teachers, elementary school.....	1,750	0	0	0	0	0	0	13	47	42	28	7	1	2	
Teachers, secondary school.....	1,214	0	0	0	0	0	0	18	51	42	18	6	1	1	
Teachers, special education.....	326	0	0	2	2	0	0	3	8	8	4	1	0	0	
Teachers, n.e.c. ²	740	0	0	0	0	0	0	0	0	5	8	7	4	3	

¹ 1997 data are averages of 1993, 1994, 1995, 1996, and 1997.

² n.e.c. = not elsewhere classified.

pose that requires projections of employment change and, in addition, projections of replacement needs due to total and net separations.

Total replacement rates. Total separation rates for all detailed occupations were developed from merged CPS data for the period 2001-02. As described earlier, total separation rates from proxy occupations were substituted for small occupations when data for the latter appeared unreliable. If employment in the occupation in question remained the same or increased from 2001 to 2002, the 2001-02 total separation rate also was the replacement rate and should be used to estimate replacement needs during a projection period. However, if employment in the occupation declined, the replacement rate was calculated by subtracting the employment decline from the separations. Total replacement rates were used without adjustment for the 2002-12 projection period. Employment for 2007, the midpoint of the period, was multiplied by the annual average replacement rates for the 2001-02 period to project annual average replacement needs over the 2002-12 period. Although labor market conditions affect the replacement rates, attempts to adjust the rates would be fraught with difficulties because not enough is known about how cyclical factors and other labor market conditions affect the rates.

Net replacement rates. To develop a net separation rate for an occupation, employment figures for that occupation in a given age group in 1997 were compared with employment in the occupation in 2002 for a group that was 5 years older. (As noted earlier, data for 1997 actually consist of the average of data for 1993, 1994, 1995, 1996, and 1997, and data for 2002 consist of the average for 1998, 1999, 2000, 2001, and 2002.) If employment for the group increased, no net separations occurred, and separations were recorded as zero. If employment declined, the number was recorded as net separations for that age group. The 5-year net separation rate for the age group was calculated by dividing the number of net separations by employment in 1997. (See table V-1.) The 5-year net separation rates for 1997-2002 for each age group could then be applied to employment in future years to obtain a projection of net separations. Excluded from these projections are the replacement needs attributable to those entering the occupa-

tion within the projection period.

Between 1997 and 2002, employment in most occupations increased or remained the same. For these occupations, the 1997-2002 net separation rates, by age, were used without adjustment to estimate net replacement needs during the projection period. If employment declined, however, one of several adjustments to the age-specific separation rates was used to obtain a net replacement rate that reduced the occupational separation rate by the rate of decline in employment. When the employment decline was less than the number of net separations among persons aged 16 to 49 in 1997, the number of net separations for that age group was reduced by the decline, which was distributed in proportion to the number of net separations in each age subgroup of the group aged 16 to 49. This technique, which confines the adjustments to the ages most affected by adverse economic conditions, was the one most frequently used. Older workers are more likely to remain employed until they retire. In most of the remaining cases, the net separations were reduced in a like fashion for persons aged 16 to 54 or persons aged 16 to 64, depending on the distribution of net separations in the occupation and the amount by which employment declined. Then, the adjusted age-specific rates were used to calculate future net replacement needs for persons employed in 2002.

Using data for persons employed as registered nurses in 2002, table V-4 illustrates the method for calculating net leavers over the period 2002-12. First, net leavers were calculated for 2002-07 by multiplying 2002 employment obtained from the CPS for each age group by the replacement rate for the same age group in 1997-2002. Before net leavers in 2007-12 were calculated, 2007 employment for each age group was estimated by identifying employment in 2002 for a 5-year-younger age group and subtracting any projected net leavers for the period 2002-07. For example, table V-4 shows the 2007 employment figure for registered nurses aged 55 to 59 to be 210,000. This estimate was arrived at by identifying the 2002 employment figure for nurses aged 50 to 54 (254,000) and subtracting the 44,000 net leavers in 2002-07 from that age group. (Any discrepancies are due to rounding.) Then, net leavers for 2007-12 were calculated by multiplying employment for 2007 for each age group by the replacement rate for that age group. Summing the number of net leavers for each of the 5-year

periods 2002-07 and 2007-12 provided an estimate of net leavers over the 10-year projection period 2002-12. The 2002-12 net replacement rates were calculated by dividing net leavers for 2002-12 by 2002 employment. Dividing the net leavers for 2002-12 by 10 yielded annual average net replacement needs.

New entrants—individuals who were younger than age 16 in 2002, but who could be expected to join the group of employed persons after 2002—were not included in the estimate of replacements for 2002-12. If they would have been included, estimates of replacements for occupations with net transfers in the younger age groups—such as those for waiters and waitresses—would be larger.

Replacement rates based on the Occupational Employment Statistics survey

The preceding sections described procedures for estimating replacement rates by using detailed occupational data from the CPS survey. However, the employment matrices used by the BLS projections program to estimate current and projected occupational employment are based primarily on data from the Occupational Employment Statistics (OES) survey, which uses occupational definitions consistent with the 2000 Standard Occupational Classification system. BLS then uses current and projected occupational employment estimates from these employment matrices to calculate the employment-growth component of projected job openings. Combining the replacement-needs component of projected job openings with the growth component of projected openings requires developing occupational replacement rates that are consistent with the OES survey. These rates were developed by (1) identifying the

Table V-4. Net replacement data for registered nurses, by age group, 2002-12

(Numbers in thousands)

Age	2002 employment ¹		Net leavers, 2002-07	2007 employment	
	Number	Net replacement rate, 1997-2002 (percent)		Number	Net leavers, 2007-12
16-99.....	2,145	7.7	200	—	253
16-19....	1	0	0	0	0
20-24....	57	0	0	1	0
25-29....	204	0	0	57	0
30-34....	257	0	0	204	0
35-39....	324	0	0	257	0
40-44....	406	3.7	15	324	12
45-49....	371	8.3	31	391	32
50-54....	254	17.2	44	340	59
55-59....	150	28.7	43	210	60
60-64....	82	59.6	49	107	64
65-69....	25	52.1	13	33	17
70-74....	9	52.4	5	12	6
75-99....	4	33.1	1	7	2

¹ 2002 data are averages of 1998, 1999, 2000, 2001, and 2002.

CPS occupation or occupations that are equivalent to the detailed OES survey-based occupation and (2) either using the CPS rate directly or calculating a weighted rate, with OES or CPS employment figures as weights, if the occupation consists of more than one OES or CPS occupation. Table V-5 presents 2001-02 total and 2002-12 net replacement rates for OES-based matrix occupations and shows 2002-12 annual average total and net replacement needs. Information identifying OES occupations for which CPS equivalent occupational data were replaced with that of a proxy CPS occupation is available from the Chief, Division of Occupational Outlook at (202) 691-5703.

Frequently asked questions about replacement needs

Q. Why does BLS compute estimates of both total and net replacement needs?

A. A single estimate is not appropriate for all purposes. Vocational guidance counseling, for example, requires information about growth and replacement needs that quantifies all opportunities in the labor market. By contrast, information about opportunities for new entrants is more useful for planning appropriate training programs. Thus, two different estimates are provided.

*Q. Why are the estimates of growth and net replacement needs described as providing a **minimum** measure of training needs?*

A. Training needs are underestimated by this measure because for many occupations, not all persons who complete training enter the occupation for which they qualify. As a result, more workers may be trained to ensure that an adequate number is available to fill expected job openings.

Q. Do the 2002–12 projected net replacement rates assume that future labor market behavior will not change from past patterns?

A. Yes, 1997–2002 occupation- and age-specific rates are used in calculating the projected rates. The 1997–2002 rates are applied to projected occupational age-distribution data. The result is an occupation-specific replacement rate that captures the impact of demographic, but not behavioral, changes.

Q. Are total and net separation rates the same as total and net replacement rates?

A. In most occupations, yes. If employment declines during the period being examined, however, separations will exceed replacement needs by the decline in employment. The reason is that, when employment is declining, not all persons who separate from an occupation are replaced.

Q. Should a projected decline in employment be subtracted from replacement needs to estimate job opportunities?

A. No! If employment declines, the number of opportunities resulting from growth is zero, and replacement needs constitute the only source of opportunities. When employment declines, separations increase both because individuals are losing their jobs and, in the case of net separations, because fewer are entering the occupation. Replacement needs—calculated by reducing separations by any decline in employment—should not be further reduced by projected employment declines.

Q. If employment is declining rapidly, is it possible for replacement needs to be zero?

A. In the extreme case, yes. For example, assume that, in a limited geographic area, a single firm is the sole employer of tool and die makers. If the firm ceases operations, all tool and die makers in the area will leave the occupation; separations will equal the decline in employment, and there will be no replacement needs. An analogous situation, though possible, is unlikely to occur at the national level because not all areas of the country share the same market conditions.

Q. Are there any data on replacement needs by industry?

A. No, estimates of replacement needs are created only for occupations. The Bureau of Labor Statistics has a survey that collects data on current job openings and labor turnover by industry. There is no equivalent survey of job openings or labor turnover by occupation. For more information, see the Job Openings and Labor Turnover Survey program Web site: <http://www.bls.gov/jlt/home.htm>.

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
00-0000	Total, all occupations	144,014	15.9	23.5	24,571	3,389
11-1300	Management, business, and financial occupations	15,501	11.0	17.4	1,833	270
11-0000	Management occupations	10,056	10.7	17.2	1,142	173
11-1000	Top executives	2,669	10.5	18.7	305	50
11-1011	Chief executives	553	9.7	18.9	58	10
11-1021	General and operations managers	2,049	10.9	18.9	243	39
11-1031	Legislators	67	5.9	12.9	4	1
11-2000	Advertising, marketing, promotions, public relations, and sales managers	700	12.8	18.3	101	13
11-2011	Advertising and promotions managers	85	13.2	18.1	13	2
11-2020	Marketing and sales managers	546	12.8	18.5	79	10
11-2021	Marketing managers	203	12.8	18.5	29	4
11-2022	Sales managers	343	12.8	18.5	51	6
11-2031	Public relations managers	69	11.9	17.3	9	1
11-3000	Operations specialties managers	1,807	9.8	17.4	194	31
11-3011	Administrative services managers	321	10.5	19.4	37	6
11-3021	Computer and information systems managers	284	10.2	18.2	34	5
11-3031	Financial managers	539	10.0	14.3	66	9
11-3040	Human resources managers	202	8.5	16.9	19	3
11-3051	Industrial production managers	182	9.3	19.3	18	4
11-3061	Purchasing managers	108	7.6	21.7	8	2
11-3071	Transportation, storage, and distribution managers	111	9.9	19.5	12	2
11-9000	Other management occupations	4,880	10.9	16.2	543	79
11-9010	Agricultural managers	1,376	10.4	7.7	131	11
11-9011	Farm, ranch, and other agricultural managers	218	11.2	17.2	25	4
11-9012	Farmers and ranchers	1,158	10.2	5.9	106	7
11-9021	Construction managers	389	10.8	18.1	45	7
11-9030	Education administrators	427	12.3	24.8	59	11
11-9031	Education administrators, preschool and child care center/program	58	12.3	24.8	8	1
11-9032	Education administrators, elementary and secondary school	217	12.3	24.8	29	5
11-9033	Education administrators, postsecondary	125	12.3	24.8	17	3
11-9039	Education administrators, all other	27	12.3	24.8	4	1
11-9041	Engineering managers	212	6.7	19.9	15	4
11-9051	Food service managers	386	14.0	16.3	57	6
11-9061	Funeral directors ¹	24	10.5	28.5	3	1
11-9071	Gaming managers	6	12.9	18.8	1	(²)
11-9081	Lodging managers	69	14.2	16.6	10	1
11-9111	Medical and health services managers ¹	244	10.5	19.5	29	5
11-9121	Natural sciences managers	45	9.8	19.2	5	1
11-9131	Postmasters and mail superintendents	25	10.9	18.9	3	(²)
11-9141	Property, real estate, and community association managers	293	10.6	18.7	33	5
11-9151	Social and community service managers	129	12.3	19.2	18	2
11-9199	All other managers	1,256	10.5	19.5	135	24
13-0000	Business and financial operations occupations	5,445	11.5	17.7	691	97
13-1000	Business operations specialists	3,177	12.3	17.7	435	56
13-1011	Agents and business managers of artists, performers, and athletes	15	11.9	19.7	2	(²)
13-1020	Buyers and purchasing agents	419	12.4	25.8	54	11
13-1021	Purchasing agents and buyers, farm products	19	10.3	34.1	2	1
13-1022	Wholesale and retail buyers, except farm products	155	15.1	26.2	24	4
13-1023	Purchasing agents, except wholesale, retail, and farm products	245	10.9	24.9	28	6
13-1030	Claims adjusters, appraisers, examiners, and investigators	241	12.1	12.3	31	3
13-1031	Claims adjusters, examiners, and investigators	227	12.1	12.3	29	3
13-1032	Insurance appraisers, auto damage	14	12.1	12.3	2	(²)
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation	158	11.9	23.5	20	4
13-1051	Cost estimators	188	11.5	22.4	24	4
13-1061	Emergency management specialists	11	11.0	22.0	1	(²)
13-1070	Human resources, training, and labor relations specialists	474	13.8	15.3	74	7
13-1071	Employment, recruitment, and placement specialists	175	13.8	15.3	27	3
13-1072	Compensation, benefits, and job analysis specialists	91	13.8	15.3	14	1

See footnotes at end of table

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
13-1073	Training and development specialists	209	13.8	15.3	33	3
13-1111	Management analysts ¹	577	10.5	13.7	70	8
13-1121	Meeting and convention planners	37	16.4	21.8	7	1
13-1198	All other business operations specialists	1,056	12.6	17.0	152	18
13-2000	Financial specialists	2,268	10.3	17.8	256	40
13-2011	Accountants and auditors	1,055	9.3	18.9	108	20
13-2021	Appraisers and assessors of real estate	88	10.2	21.4	10	2
13-2031	Budget analysts	62	11.5	16.3	8	1
13-2041	Credit analysts	66	11.3	15.6	8	1
13-2050	Financial analysts and advisors	400	10.7	15.0	48	6
13-2051	Financial analysts	172	10.6	14.8	20	3
13-2052	Personal financial advisors	126	11.0	13.0	16	2
13-2053	Insurance underwriters	102	10.5	17.7	11	2
13-2061	Financial examiners	25	12.8	22.8	3	1
13-2070	Loan counselors and officers	255	11.6	16.1	32	4
13-2071	Loan counselors	31	11.6	16.1	4	(²)
13-2072	Loan officers	223	11.6	16.1	28	4
13-2080	Tax examiners, collectors, preparers, and revenue agents	154	10.9	19.6	18	3
13-2081	Tax examiners, collectors, and revenue agents	75	10.9	22.9	8	2
13-2082	Tax preparers	79	11.0	16.5	10	1
13-2099	All other financial specialists	162	12.0	17.6	21	3
15-2900	Professional and related occupations	27,687	10.8	19.2	3,324	532
15-0000	Computer and mathematical science occupations	3,018	9.8	13.7	347	41
15-1000	Computer specialists	2,911	9.8	13.2	336	39
15-1011	Computer and information scientists, research	23	10.5	11.3	3	(²)
15-1021	Computer programmers	499	7.6	23.6	40	12
15-1030	Computer software engineers	675	9.4	9.9	78	7
15-1031	Computer software engineers, applications	394	9.4	9.9	45	4
15-1032	Computer software engineers, systems software	281	9.4	9.9	32	3
15-1041	Computer support specialists	507	11.0	12.3	64	6
15-1051	Computer systems analysts	468	10.5	11.3	59	5
15-1061	Database administrators	110	10.4	10.3	14	1
15-1071	Network and computer systems administrators	251	10.1	11.1	30	3
15-1081	Network systems and data communications analysts	186	9.6	11.8	23	2
15-1099	All other computer specialists	192	10.5	11.3	24	2
15-2000	Mathematical science occupations	107	10.1	26.3	11	3
15-2011	Actuaries ¹	15	10.5	42.7	2	1
15-2021	Mathematicians ¹	3	10.5	44.0	(²)	(²)
15-2031	Operations research analysts	62	9.9	21.9	6	1
15-2041	Statisticians ¹	20	10.5	26.3	2	1
15-2090	Miscellaneous mathematical science occupations ¹	7	10.4	22.7	1	(²)
17-0000	Architecture and engineering occupations	2,587	8.5	22.2	229	57
17-1000	Architects, surveyors, and cartographers	204	7.1	19.0	16	4
17-1010	Architects, except naval	136	5.6	11.4	8	2
17-1011	Architects, except landscape and naval	113	5.6	11.4	7	1
17-1012	Landscape architects	23	5.6	11.4	1	(²)
17-1020	Surveyors, cartographers, and photogrammetrists	64	10.5	34.2	7	2
17-1021	Cartographers and photogrammetrists	9	10.5	34.2	1	(²)
17-1022	Surveyors	56	10.5	34.2	6	2
17-1099	All other architects, surveyors, and cartographers	3	10.5	34.2	(²)	(²)
17-2000	Engineers	1,478	6.9	21.4	106	32
17-2011	Aerospace engineers ¹	78	6.1	24.8	5	2
17-2021	Agricultural engineers	3	6.1	32.9	(²)	(²)
17-2031	Biomedical engineers	8	3.7	17.0	(²)	(²)
17-2041	Chemical engineers ¹	33	6.2	29.9	2	1
17-2051	Civil engineers	228	6.5	15.9	16	4
17-2061	Computer hardware engineers	74	7.7	16.7	6	1
17-2070	Electrical and electronics engineers	292	7.0	19.7	21	6
17-2071	Electrical engineers	156	7.0	19.7	11	3
17-2072	Electronics engineers, except computer	136	7.0	19.7	10	3

See footnotes at end of table.

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
17-2081	Environmental engineers	47	9.8	17.0	6	1
17-2110	Industrial engineers, including health and safety	194	9.1	24.2	19	5
17-2111	Health and safety engineers, except mining safety engineers and inspectors	36	9.1	24.2	3	1
17-2112	Industrial engineers	158	9.1	24.2	15	4
17-2121	Marine engineers and naval architects ¹	5	6.3	47.2	(²)	(²)
17-2131	Materials engineers	24	6.5	26.3	2	1
17-2141	Mechanical engineers	215	5.9	27.3	13	6
17-2151	Mining and geological engineers, including mining safety engineers	5	6.1	28.9	(²)	(²)
17-2161	Nuclear engineers ¹	16	6.1	29.9	1	(²)
17-2171	Petroleum engineers ¹	14	6.2	31.8	1	(²)
17-2199	All other engineers	243	6.0	19.0	15	5
17-3000	Drafters, engineering, and mapping technicians	905	11.4	24.2	108	22
17-3010	Drafters	216	12.6	28.1	28	6
17-3011	Architectural and civil drafters	106	12.6	28.1	14	3
17-3012	Electrical and electronics drafters	38	12.6	28.1	5	1
17-3013	Mechanical drafters	72	12.6	28.1	9	2
17-3020	Engineering technicians, except drafters	478	10.6	20.9	53	10
17-3021	Aerospace engineering and operations technicians	15	10.6	20.9	2	(²)
17-3022	Civil engineering technicians	92	10.6	20.9	10	2
17-3023	Electrical and electronic engineering technicians	204	10.6	20.9	23	4
17-3024	Electro-mechanical technicians	31	10.6	20.9	4	1
17-3025	Environmental engineering technicians	19	10.6	20.9	2	(²)
17-3026	Industrial engineering technicians	62	10.6	20.9	7	1
17-3027	Mechanical engineering technicians	55	10.6	20.9	6	1
17-3031	Surveying and mapping technicians	60	13.6	36.4	9	2
17-3099	All other drafters, engineering, and mapping technicians	150	11.2	24.1	18	4
19-0000	Life, physical, and social science occupations	1,237	9.7	24.1	131	30
19-1000	Life scientists	214	7.2	24.2	17	5
19-1010	Agricultural and food scientists ¹	18	7.5	17.8	1	(²)
19-1020	Biological scientists	75	7.1	31.3	6	2
19-1021	Biochemists and biophysicists	17	7.1	31.3	1	1
19-1022	Microbiologists	16	7.1	31.3	1	1
19-1023	Zoologists and wildlife biologists	15	7.1	31.3	1	(²)
19-1029	Biological scientists, all other	27	7.1	31.3	2	1
19-1030	Conservation scientists and foresters	33	6.5	29.2	2	1
19-1031	Conservation scientists ¹	19	6.5	29.2	1	1
19-1032	Foresters ¹	14	6.5	29.2	1	(²)
19-1040	Medical scientists	62	7.4	17.6	5	1
19-1041	Epidemiologists ¹	4	7.4	17.6	(²)	(²)
19-1042	Medical scientists, except epidemiologists ¹	58	7.4	17.6	5	1
19-1099	All other life scientists ¹	26	7.4	17.6	2	(²)
19-2000	Physical scientists	251	6.9	25.4	19	6
19-2010	Astronomers and physicists	14	6.5	32.4	1	(²)
19-2011	Astronomers ¹	1	6.5	32.4	(²)	(²)
19-2012	Physicists ¹	13	6.5	32.4	1	(²)
19-2021	Atmospheric and space scientists ¹	8	6.4	39.3	1	(²)
19-2030	Chemists and materials scientists	91	7.2	32.7	7	3
19-2031	Chemists	84	7.2	32.7	6	3
19-2032	Materials scientists	7	7.2	32.7	1	(²)
19-2040	Environmental scientists and geoscientists	101	6.7	17.8	7	2
19-2041	Environmental scientists and specialists, including health	65	6.7	17.8	5	1
19-2042	Geoscientists, except hydrologists and geographers	28	6.7	17.8	2	(²)
19-2043	Hydrologists	8	6.7	17.8	1	(²)
19-2099	All other physical scientists	37	7.3	22.8	3	1
19-3000	Social scientists and related occupations	426	10.8	24.4	51	10
19-3011	Economists	16	10.0	29.0	2	(²)
19-3020	Market and survey researchers	155	10.7	25.9	19	4
19-3021	Market research analysts	134	10.7	25.9	16	3
19-3022	Survey researchers	20	10.7	25.9	3	1
19-3030	Psychologists	139	10.0	21.8	16	3
19-3031	Clinical, counseling, and school psychologists	137	10.0	21.8	15	3
19-3032	Industrial-organizational psychologists	2	10.0	21.8	(²)	(²)
19-3041	Sociologists ¹	3	13.0	35.1	(²)	(²)

See footnotes at end of table

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
19-3051	Urban and regional planners ¹	32	12.9	33.4	4	1
19-3090	Miscellaneous social scientists and related workers	14	12.0	20.2	2	(²)
19-3091	Anthropologists and archeologists ¹	5	12.0	20.2	1	(²)
19-3092	Geographers ¹	1	12.0	20.2	(²)	(²)
19-3093	Historians ¹	2	12.0	20.2	(²)	(²)
19-3094	Political scientists ¹	6	12.0	20.2	1	(²)
19-3098	All other social scientists and related workers	68	11.7	21.2	8	1
19-4000	Life, physical, and social science technicians	346	12.0	22.8	45	8
19-4011	Agricultural and food science technicians	20	13.9	19.3	3	(²)
19-4021	Biological technicians ¹	48	13.4	16.9	7	1
19-4031	Chemical technicians	69	12.0	24.9	8	2
19-4041	Geological and petroleum technicians	11	9.6	25.5	1	(²)
19-4051	Nuclear technicians	6	12.1	26.9	1	(²)
19-4090	Other life, physical, and social science technicians	55	11.7	23.5	7	1
19-4091	Environmental science and protection technicians, including health	28	11.7	23.5	4	1
19-4092	Forensic science technicians	8	11.7	23.5	1	(²)
19-4093	Forest and conservation technicians	19	11.7	23.5	2	(²)
19-4098	All other life, physical, and social science technicians	137	11.7	23.5	17	3
21-0000	Community and social services occupations	2,190	12.7	19.1	314	42
21-1000	Counselors, social workers, and other community and social service specialists	1,436	14.0	19.4	231	28
21-1010	Counselors	526	12.5	22.8	73	12
21-1011	Substance abuse and behavioral disorder counselors	67	12.5	22.8	9	2
21-1012	Educational, vocational, and school counselors	228	12.5	22.8	31	5
21-1013	Marriage and family therapists	23	12.5	22.8	3	1
21-1014	Mental health counselors	85	12.5	22.8	12	2
21-1015	Rehabilitation counselors	122	12.5	22.8	18	3
21-1020	Social workers	477	14.1	17.1	76	8
21-1021	Child, family, and school social workers	274	14.1	17.1	43	5
21-1022	Medical and public health social workers	107	14.1	17.1	17	2
21-1023	Mental health and substance abuse social workers	95	14.1	17.1	16	2
21-1090	Miscellaneous community and social service specialists	434	15.7	17.6	82	8
21-1091	Health educators	45	15.7	17.6	8	1
21-1092	Probation officers and correctional treatment specialists	84	15.7	17.6	14	1
21-1093	Social and human service assistants	305	15.7	17.6	60	5
21-2000	Religious workers	506	8.1	18.5	44	9
21-2011	Clergy	400	6.9	20.5	30	8
21-2021	Directors, religious activities and education ¹	105	12.6	11.0	15	1
21-9099	All other counselors, social, and religious workers	248	13.5	18.7	38	5
23-0000	Legal occupations	1,168	7.9	11.7	100	14
23-1000	Lawyers, judges, and related workers	747	5.9	12.9	47	10
23-1011	Lawyers	695	5.9	12.9	44	9
23-1020	Judges, magistrates, and other judicial workers	51	5.9	12.9	3	1
23-1021	Administrative law judges, adjudicators, and hearing officers	19	5.9	12.9	1	(²)
23-1022	Arbitrators, mediators, and conciliators	6	5.9	12.9	(²)	(²)
23-1023	Judges, magistrate judges, and magistrates	27	5.9	12.9	2	(²)
23-2000	Legal support workers	320	11.5	9.1	40	3
23-2011	Paralegals and legal assistants	200	11.6	8.0	26	2
23-2090	Miscellaneous legal support workers	121	11.4	10.9	14	1
23-2091	Court reporters	18	11.4	10.9	2	(²)
23-2092	Law clerks	48	11.4	10.9	6	1
23-2093	Title examiners, abstractors, and searchers	55	11.4	10.9	6	1
23-9099	All other legal and related workers	101	11.4	10.9	12	1
25-0000	Education, training, and library occupations	8,530	12.8	20.9	1,225	178
25-1000	Postsecondary teachers	1,581	9.8	22.6	185	36
25-2000	Primary, secondary, and special education teachers	4,187	11.6	22.4	534	94
25-2010	Preschool and kindergarten teachers	592	17.2	11.9	119	7
25-2011	Preschool teachers, except special education	424	17.2	11.9	86	5
25-2012	Kindergarten teachers, except special education	168	17.2	11.9	33	2
25-2020	Elementary and middle school teachers	2,070	11.0	22.1	242	46

See footnotes at end of table

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
25-2021	Elementary school teachers, except special education	1,467	11.0	22.1	173	32
25-2022	Middle school teachers, except special and vocational education	585	11.0	22.1	67	13
25-2023	Vocational education teachers, middle school	18	11.0	22.1	2	(²)
25-2030	Secondary school teachers	1,093	10.1	28.1	120	31
25-2031	Secondary school teachers, except special and vocational education	988	10.1	28.1	109	28
25-2032	Vocational education teachers, secondary school	105	10.1	28.1	11	3
25-2040	Special education teachers	433	10.5	23.8	52	10
25-3000	Other teachers and instructors	960	15.6	12.3	175	12
25-3011	Adult literacy, remedial education, and GED teachers and instructors	80	15.6	12.3	14	1
25-3021	Self-enrichment education teachers	200	15.6	12.3	37	2
25-3999	All other teachers, primary, secondary, and adult	679	15.6	12.3	123	8
25-4000	Librarians, curators, and archivists	309	11.6	28.8	38	9
25-4010	Archivists, curators, and museum technicians ¹	22	9.3	22.0	2	(²)
25-4021	Librarians	167	8.0	23.9	14	4
25-4031	Library technicians	119	17.0	36.9	22	4
25-9000	Other education, training, and library occupations	1,493	17.6	18.7	293	28
25-9011	Audio-visual collections specialists	10	15.4	15.2	2	(²)
25-9021	Farm and home management advisors	16	15.4	15.2	3	(²)
25-9031	Instructional coordinators	98	15.4	15.2	17	1
25-9041	Teacher assistants	1,277	18.0	19.3	256	25
25-9199	All other library, museum, training, and other education workers	93	15.4	15.2	16	1
27-0000	Arts, design, entertainment, sports, and media occupations	2,377	12.8	18.8	329	45
27-1000	Art and design occupations	775	12.1	15.5	101	12
27-1010	Artists and related workers	149	13.9	21.7	22	3
27-1011	Art directors	51	13.9	21.7	7	1
27-1013	Fine artists, including painters, sculptors, and illustrators	23	13.9	21.7	3	1
27-1014	Multi-media artists and animators	75	13.9	21.7	11	2
27-1020	Designers	532	11.4	13.4	66	7
27-1021	Commercial and industrial designers	52	11.4	13.4	6	1
27-1022	Fashion designers	15	11.4	13.4	2	(²)
27-1023	Floral designers	104	11.4	13.4	13	1
27-1024	Graphic designers	212	11.4	13.4	27	3
27-1025	Interior designers	60	11.4	13.4	8	1
27-1026	Merchandise displayers and window trimmers	77	11.4	13.4	9	1
27-1027	Set and exhibit designers	12	11.4	13.4	2	(²)
27-1099	All other art and design workers	95	13.1	17.8	13	2
27-2000	Entertainers and performers, sports and related occupations	606	14.4	20.6	95	12
27-2010	Actors, producers, and directors	139	11.6	13.9	18	2
27-2011	Actors ¹	63	11.7	12.7	8	1
27-2012	Producers and directors ¹	76	11.5	15.0	10	1
27-2020	Athletes, coaches, umpires, and related workers	158	17.8	19.2	31	3
27-2021	Athletes and sports competitors	15	17.8	19.2	3	(²)
27-2022	Coaches and scouts	130	17.8	19.2	25	2
27-2023	Umpires, referees, and other sports officials	14	17.8	19.2	3	(²)
27-2030	Dancers and choreographers	37	14.9	61.5	6	2
27-2031	Dancers ¹	20	14.9	61.5	3	1
27-2032	Choreographers ¹	17	14.9	61.5	3	1
27-2040	Musicians, singers, and related workers	215	13.5	21.0	32	5
27-2041	Music directors and composers	54	13.5	21.0	8	1
27-2042	Musicians and singers	161	13.5	21.0	24	3
27-2099	All other entertainers and performers, sports and related workers ¹	56	14.8	12.2	9	1
27-3000	Media and communication occupations	700	12.6	19.6	95	14
27-3010	Announcers	76	11.1	25.3	8	2
27-3020	News analysts, reporters and correspondents	66	9.2	24.2	6	2
27-3031	Public relations specialists	158	14.7	14.4	27	2
27-3040	Writers and editors	319	11.8	21.9	41	7
27-3041	Editors	130	9.4	24.2	13	3
27-3042	Technical writers	50	8.5	28.8	5	1
27-3043	Writers and authors	139	15.2	17.2	23	2
27-3090	Miscellaneous media and communications workers	82	14.9	12.1	13	1
27-3091	Interpreters and translators ¹	24	14.9	12.1	4	(²)

See footnotes at end of table.

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
27-3099	All other media and communication workers ¹	58	14.9	12.1	9	1
27-4000	Media and communication equipment occupations	295	11.9	21.9	38	6
27-4010	Broadcast and sound engineering technicians and radio operators	93	9.2	24.5	9	2
27-4011	Audio and video equipment technicians	42	9.2	24.5	4	1
27-4012	Broadcast technicians	35	9.2	24.5	3	1
27-4013	Radio operators	3	9.2	24.5	(²)	(²)
27-4014	Sound engineering technicians	13	9.2	24.5	1	(²)
27-4021	Photographers	130	12.6	20.4	18	3
27-4030	Television, video, and motion picture camera operators and editors	48	11.2	21.2	6	1
27-4031	Camera operators, television, video, and motion picture	28	11.2	21.2	3	1
27-4032	Film and video editors	19	11.2	21.2	2	(²)
27-4099	All other media and communication equipment workers	24	20.2	21.3	5	1
29-0000	Healthcare practitioners and technical occupations	6,580	8.7	19.0	649	125
29-1000	Health diagnosing and treating practitioners	4,071	6.5	19.5	298	80
29-1011	Chiropractors ¹	49	4.0	18.9	2	1
29-1020	Dentists ¹	153	4.0	16.8	6	3
29-1031	Dietitians and nutritionists	49	14.6	26.0	8	1
29-1041	Optometrists ¹	32	3.9	27.7	1	1
29-1051	Pharmacists ¹	230	6.9	19.4	18	4
29-1060	Physicians and surgeons	583	4.6	13.4	29	8
29-1071	Physician assistants ¹	63	6.3	15.4	5	1
29-1081	Podiatrists ¹	13	3.9	24.3	1	(²)
29-1111	Registered nurses	2,284	6.7	20.9	173	48
29-1120	Therapists	450	8.3	19.6	43	9
29-1121	Audiologists ¹	11	8.4	24.2	1	(²)
29-1122	Occupational therapists ¹	82	8.2	13.5	8	1
29-1123	Physical therapists ¹	137	8.3	9.8	13	1
29-1124	Radiation therapists ¹	14	7.4	22.8	1	(²)
29-1125	Recreational therapists ¹	27	8.7	23.9	2	1
29-1126	Respiratory therapists ¹	86	8.2	32.9	8	3
29-1127	Speech-language pathologists ¹	94	8.3	24.9	9	2
29-1131	Veterinarians ¹	58	4.0	24.1	3	1
29-1198	All other health diagnosing and treating practitioners ¹	107	6.7	21.7	8	2
29-2000	Health technologists and technicians	2,263	12.2	18.1	313	41
29-2010	Clinical laboratory technologists and technicians	297	12.0	26.9	39	8
29-2011	Medical and clinical laboratory technologists	150	12.0	26.9	20	4
29-2012	Medical and clinical laboratory technicians	147	12.0	26.9	19	4
29-2021	Dental hygienists	148	1.8	8.5	3	1
29-2030	Diagnostic related technologists and technicians	271	9.7	18.7	29	5
29-2031	Cardiovascular technologists and technicians	43	9.7	18.7	5	1
29-2032	Diagnostic medical sonographers	37	9.7	18.7	4	1
29-2033	Nuclear medicine technologists	17	9.7	18.7	2	(²)
29-2034	Radiologic technologists and technicians	174	9.7	18.7	19	3
29-2041	Emergency medical technicians and paramedics	179	14.4	11.5	30	2
29-2050	Health diagnosing and treating practitioner support technicians	451	15.6	13.0	80	6
29-2051	Dietetic technicians ¹	29	15.6	13.0	5	(²)
29-2052	Pharmacy technicians ¹	211	15.6	13.0	38	3
29-2053	Psychiatric technicians ¹	60	15.6	13.0	10	1
29-2054	Respiratory therapy technicians ¹	26	15.6	13.0	5	(²)
29-2055	Surgical technologists ¹	72	15.6	13.0	13	1
29-2056	Veterinary technologists and technicians ¹	53	15.6	13.0	10	1
29-2061	Licensed practical and licensed vocational nurses	702	13.0	21.8	100	15
29-2071	Medical records and health information technicians	147	11.6	14.3	21	2
29-2081	Opticians, dispensing ¹	63	13.7	17.5	9	1
29-2090	Miscellaneous health technologists and technicians	5	12.9	16.2	1	(²)
29-2091	Orthotists and prosthetists	5	12.9	16.2	1	(²)
29-9000	Other healthcare practitioners and technical occupations	56	14.3	21.7	9	1
29-9010	Occupational health and safety specialists and technicians	41	14.3	21.7	6	1
29-9090	Miscellaneous health practitioners and technical workers	14	14.3	21.7	2	(²)
29-9091	Athletic trainers	14	14.3	21.7	2	(²)
29-9199	All other health practitioners and technical workers	190	13.5	18.1	29	3

See footnotes at end of table.

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
31-3900	Service occupations	26,569	22.8	28.7	6,671	762
31-0000	Healthcare support occupations	3,310	17.5	15.9	681	53
31-1000	Nursing, psychiatric, and home health aides	2,014	19.5	13.1	454	26
31-1011	Home health aides	580	19.5	13.1	140	8
31-1012	Nursing aides, orderlies, and attendants	1,375	19.5	13.1	302	18
31-1013	Psychiatric aides	59	19.5	13.1	12	1
31-2000	Occupational and physical therapist assistants and aides	114	15.1	15.7	21	2
31-2010	Occupational therapist assistants and aides	27	11.1	12.7	4	(²)
31-2011	Occupational therapist assistants ¹	18	11.1	12.7	2	(²)
31-2012	Occupational therapist aides ¹	8	11.1	12.7	1	(²)
31-2020	Physical therapist assistants and aides	87	16.3	16.7	17	1
31-2021	Physical therapist assistants ¹	50	16.3	16.7	10	1
31-2022	Physical therapist aides ¹	37	16.3	16.7	7	1
31-9000	Other healthcare support occupations	1,182	14.6	20.7	206	24
31-9011	Massage therapists	92	23.0	19.4	24	2
31-9090	Miscellaneous healthcare support occupations	1,090	13.9	20.8	181	23
31-9091	Dental assistants	266	8.7	28.0	28	7
31-9092	Medical assistants	365	15.6	18.5	73	7
31-9093	Medical equipment preparers	36	15.6	18.5	6	1
31-9094	Medical transcriptionists	101	15.6	18.5	17	2
31-9095	Pharmacy aides	60	15.6	18.5	10	1
31-9096	Veterinary assistants and laboratory animal caretakers	63	15.6	18.5	11	1
31-9099	All other healthcare support workers	198	15.6	18.5	35	4
33-0000	Protective service occupations	3,116	14.1	28.2	492	88
33-1000	First-line supervisors/managers, protective service workers	266	10.4	32.9	30	9
33-1010	First-line supervisors/managers, law enforcement workers	147	10.4	32.2	17	5
33-1011	First-line supervisors/managers of correctional officers	33	10.3	29.5	4	1
33-1012	First-line supervisors/managers of police and detectives	114	10.5	33.0	13	4
33-1021	First-line supervisors/managers of fire fighting and prevention workers ¹	63	10.4	41.2	7	3
33-1099	All other first-line supervisors/managers, protective service workers	56	10.5	25.4	7	1
33-2000	Fire fighting and prevention workers	296	8.2	29.0	27	9
33-2011	Fire fighters	282	8.2	29.0	26	8
33-2020	Fire inspectors	14	8.7	28.5	1	(²)
33-3000	Law enforcement workers	1,179	8.8	23.9	116	28
33-3010	Bailiffs, correctional officers, and jailers	442	9.1	20.7	45	9
33-3011	Bailiffs	15	9.1	20.7	1	(²)
33-3012	Correctional officers and jailers	427	9.1	20.7	44	9
33-3021	Detectives and criminal investigators	94	9.7	26.8	10	3
33-3031	Fish and game wardens ¹	8	8.1	25.0	1	(²)
33-3041	Parking enforcement workers ¹	11	9.1	18.6	1	(²)
33-3050	Police officers	625	8.4	25.8	59	16
33-3051	Police and sheriff's patrol officers	619	8.4	25.9	58	16
33-3052	Transit and railroad police	6	11.4	18.9	1	(²)
33-9000	Other protective service workers	1,374	20.4	30.9	320	42
33-9011	Animal control workers	11	13.8	69.8	2	1
33-9021	Private detectives and investigators	48	16.3	21.1	9	1
33-9030	Security guards and gaming surveillance officers	1,004	19.7	21.8	229	22
33-9031	Gaming surveillance officers and gaming investigators	9	19.7	21.8	2	(²)
33-9032	Security guards	995	19.7	21.8	227	22
33-9091	Crossing guards ¹	74	24.5	32.2	20	2
33-9095	All other protective service workers	237	23.7	69.3	60	16
35-0000	Food preparation and serving related occupations	10,200	30.3	39.7	3,338	405
35-1000	Supervisors, food preparation and serving workers	824	21.2	24.7	188	20
35-1011	Chefs and head cooks	132	23.5	29.6	33	4
35-1012	First-line supervisors/managers of food preparation and serving workers	692	20.7	23.8	155	16
35-2000	Cooks and food preparation workers	2,836	28.1	32.3	845	92
35-2010	Cooks	1,986	27.5	31.0	570	61

See footnotes at end of table

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
35-2011	Cooks, fast food	588	27.5	31.0	166	18
35-2012	Cooks, institution and cafeteria	436	27.5	31.0	121	13
35-2013	Cooks, private household	8	27.5	31.0	2	(²)
35-2014	Cooks, restaurant	727	27.5	31.0	216	23
35-2015	Cooks, short order	227	27.5	31.0	65	7
35-2021	Food preparation workers	850	29.4	35.4	275	30
35-3000	Food and beverage serving workers	5,211	32.6	47.9	1,857	249
35-3011	Bartenders	463	20.8	39.5	100	18
35-3020	Fast food and counter workers	2,457	35.4	47.5	965	117
35-3021	Combined food preparation and serving workers, including fast food ¹	1,990	34.6	43.3	767	86
35-3022	Counter attendants, cafeteria, food concession, and coffee shop	467	32.0	65.3	198	30
35-3031	Waiters and waitresses	2,097	32.6	51.5	744	108
35-3041	Food servers, nonrestaurant	195	23.1	33.5	47	7
35-9000	Other food preparation and serving related workers	1,328	31.7	33.0	448	44
35-9011	Dining room and cafeteria attendants and bartender helpers	409	33.4	33.4	147	14
35-9021	Dishwashers	505	32.0	33.8	169	17
35-9031	Hosts and hostesses, restaurant, lounge, and coffee shop	298	30.3	31.8	98	9
35-9099	All other food preparation and serving related workers	117	27.5	31.1	35	4
37-0000	Building and grounds cleaning and maintenance occupations	5,485	18.5	20.0	1,096	110
37-1000	Supervisors, building and grounds cleaning and maintenance workers	380	10.3	18.0	43	7
37-1011	First-line supervisors/managers of housekeeping and janitorial workers	230	10.7	23.6	27	5
37-1012	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers	150	9.7	9.3	16	1
37-2000	Building cleaning and pest control workers	3,820	19.9	19.7	815	75
37-2010	Building cleaning workers	3,759	19.9	19.8	804	74
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	2,267	18.2	19.0	450	43
37-2012	Maids and housekeeping cleaners	1,492	22.7	21.0	354	31
37-2021	Pest control workers ¹	62	15.9	15.1	11	1
37-3000	Grounds maintenance workers	1,285	16.8	21.6	238	28
37-3010	Grounds maintenance workers	1,160	16.7	21.8	215	25
37-3011	Landscaping and groundskeeping workers	1,074	16.7	21.8	199	23
37-3012	Pesticide handlers, sprayers, and applicators, vegetation	27	16.7	21.8	5	1
37-3013	Tree trimmers and pruners	59	16.7	21.8	11	1
37-9099	All other building and grounds cleaning and maintenance workers	125	17.3	20.5	23	3
39-0000	Personal care and service occupations	4,456	21.7	24.0	1,064	107
39-1000	Supervisors, personal care and service workers	276	11.7	24.2	34	7
39-1010	First-line supervisors/managers of gaming workers	60	13.7	21.0	9	1
39-1011	Gaming supervisors	39	13.7	21.0	6	1
39-1012	Slot key persons	21	13.7	21.0	3	(²)
39-1021	First-line supervisors/managers of personal service workers	216	11.2	25.1	25	5
39-2000	Animal care and service workers	151	21.8	24.1	36	4
39-2011	Animal trainers	26	15.4	20.6	4	1
39-2021	Nonfarm animal caretakers	125	23.1	24.9	32	3
39-3000	Entertainment attendants and related workers	507	26.3	35.7	149	18
39-3010	Gaming services workers	92	31.3	31.6	32	3
39-3011	Gaming dealers	78	31.3	31.6	27	2
39-3012	Gaming and sports book writers and runners	14	31.3	31.6	5	(²)
39-3021	Motion picture projectionists ¹	9	13.3	51.7	1	(²)
39-3031	Ushers, lobby attendants, and ticket takers ¹	105	24.2	57.0	27	6
39-3090	Miscellaneous entertainment attendants and related workers	261	25.6	28.8	76	8
39-3091	Amusement and recreation attendants	234	25.6	28.8	68	7
39-3092	Costume attendants	4	25.6	28.8	1	(²)
39-3093	Locker room, coatroom, and dressing room attendants	23	25.6	28.8	7	1
39-3199	All other gaming service workers	40	38.1	30.4	12	1
39-4000	Funeral service workers	33	11.0	20.9	4	1
39-4011	Embalmers	7	11.0	20.9	1	(²)
39-4021	Funeral attendants	26	11.0	20.9	3	1

See footnotes at end of table

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
99-6000	Personal appearance workers	794	10.3	20.0	93	15
99-6010	Barbers and cosmetologists	651	10.2	20.1	71	13
99-6011	Barbers	66	10.3	28.1	7	2
99-6012	Harddressers, hairstylists, and cosmetologists	585	10.2	19.3	64	11
99-6090	Miscellaneous personal appearance workers	133	10.6	19.4	12	2
99-6091	Making artists, theatrical and performance	2	10.6	19.4	(²)	(²)
99-6092	Manicurists and pedicurists	51	10.6	19.4	6	1
99-6093	Skincare workers	29	10.6	19.4	3	(²)
99-6094	Skin care specialists	25	10.6	19.4	3	(²)
99-6000	Transportation, tourism, and lodging attendants	248	22.4	19.3	60	5
99-6010	Baggage porters, bellhops, and concierges	75	24.4	26.4	20	2
99-6011	Baggage porters and bellhops ¹	58	24.4	26.4	15	2
99-6012	Concierges ¹	17	24.4	26.4	4	(²)
99-6020	Tour and travel guides	43	24.3	26.5	11	1
99-6021	Tour guides and escorts ¹	36	24.3	26.5	9	1
99-6022	Travel guides ¹	6	24.3	26.5	2	(²)
99-6030	Transportation attendants	130	20.6	12.8	29	2
99-6031	Flight attendants ¹	104	20.6	12.8	23	1
99-6032	Transportation attendants, except flight attendants and baggage porters ¹	26	20.6	12.8	6	(²)
99-9000	Other personal care and service workers	2,490	25.1	23.2	698	58
99-9011	Child care workers	1,211	32.3	27.2	414	33
99-9021	Personal and home care aides	608	21.4	16.0	156	10
99-9030	Recreation and fitness workers	485	16.4	22.9	91	11
99-9031	Fitness trainers and aerobics instructors	183	16.4	22.9	37	4
99-9032	Recreation workers	302	16.4	22.9	54	7
99-9041	Residential advisors	53	19.1	21.1	12	1
99-9099	Personal care and service workers, all other	134	16.5	21.5	25	3
41-0000	Sales and related occupations	15,260	21.1	31.9	3,421	487
41-1000	Supervisors, sales workers	2,395	12.7	18.2	316	44
41-1011	First-line supervisors/managers of retail sales workers	1,798	13.1	18.0	246	32
41-1012	First-line supervisors/managers of non-retail sales workers	597	11.4	18.9	70	11
41-2000	Retail sales workers	8,224	28.1	41.4	2,476	341
41-2010	Cashiers	3,455	34.3	48.7	1,266	169
41-2011	Cashiers, except gaming	3,432	34.3	48.7	1,253	167
41-2012	Gaming change persons and booth cashiers	33	34.3	48.7	13	2
41-2020	Counter and rental clerks and parts salespersons	683	25.2	34.8	186	24
41-2021	Counter and rental clerks	436	30.3	38.3	149	17
41-2022	Parts salespersons	248	14.7	28.6	36	7
41-2031	Retail salespersons	4,076	23.4	36.4	1,025	148
41-3000	Sales representatives, services	957	12.4	19.0	124	18
41-3011	Advertising sales agents	157	13.8	19.4	23	3
41-3021	Insurance sales agents	381	12.7	23.9	51	9
41-3031	Securities, commodities, and financial services sales agents	300	11.6	11.3	37	3
41-3041	Travel agents ¹	118	11.8	22.4	13	3
41-4000	Sales representatives, wholesale and manufacturing	1,857	9.1	26.3	184	49
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products ¹	398	9.1	26.3	40	10
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products ¹	1,459	9.1	26.3	145	38
41-9000	Other sales and related workers	1,827	16.8	19.8	321	36
41-9010	Models, demonstrators, and product promoters	179	20.3	22.2	39	4
41-9011	Demonstrators and product promoters	175	20.3	22.2	38	4
41-9012	Models	5	20.3	22.2	1	(²)
41-9020	Real estate brokers and sales agents	407	10.5	19.9	44	8
41-9021	Real estate brokers	99	10.5	19.9	11	2
41-9022	Real estate sales agents	308	10.5	19.9	33	6
41-9031	Sales engineers ¹	82	6.1	29.8	5	2
41-9041	Telemarketers	428	21.0	16.4	88	7

See footnotes at end of table

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
41-9091	Door-to-door sales workers, news and street vendors, and related workers	166	26.2	23.6	37	4
41-9098	All other sales and related workers	577	16.6	19.0	106	11
43-0000	Office and administrative support occupations	23,851	16.7	22.9	4,116	545
43-1000	Supervisors, office and administrative support workers	1,459	8.9	21.5	135	31
43-1011	First-line supervisors/managers of office and administrative support workers	1,459	8.9	21.5	135	31
43-2000	Communications equipment operators	304	19.1	26.4	55	8
43-2011	Switchboard operators, including answering service	236	20.2	25.6	48	6
43-2021	Telephone operators	50	13.1	25.9	5	1
43-2099	All other communications equipment operators	18	16.3	21.4	3	(²)
43-3000	Financial clerks	3,726	15.3	23.5	589	88
43-3011	Bill and account collectors	413	15.9	18.8	74	8
43-3021	Billing and posting clerks and machine operators	907	14.7	17.0	77	9
43-3031	Bookkeeping, accounting, and auditing clerks	1,983	13.5	18.7	272	37
43-3041	Gaming cage workers	18	36.4	48.7	7	1
43-3051	Payroll and timekeeping clerks	198	9.1	26.4	19	5
43-3061	Procurement clerks	77	17.4	25.4	13	2
43-3071	Tellers	530	22.9	49.3	127	26
43-4000	Information and record clerks	5,394	20.5	21.3	1,190	115
43-4011	Brokerage clerks	78	12.8	13.3	9	1
43-4021	Correspondence clerks	33	20.0	29.7	7	1
43-4031	Court, municipal, and license clerks	106	11.8	22.2	13	2
43-4041	Credit authorizers, checkers, and clerks	80	19.3	19.2	15	2
43-4051	Customer service representatives	1,894	19.7	14.9	419	28
43-4061	Eligibility interviewers, government programs	94	12.6	26.7	11	3
43-4071	File clerks	267	23.4	29.7	62	8
43-4081	Hotel, motel, and resort desk clerks	118	23.7	44.9	47	8
43-4111	Interviewers, except eligibility and loan	193	20.8	25.8	46	5
43-4121	Library assistants, clerical	120	20.4	40.5	27	5
43-4131	Loan interviewers and clerks	170	18.3	13.7	29	2
43-4141	New accounts clerks	99	23.2	25.1	24	2
43-4151	Order clerks	330	18.6	22.5	60	7
43-4161	Human resources assistants, except payroll and timekeeping	174	18.7	21.5	36	4
43-4171	Receptionists and information clerks	1,100	23.9	24.6	302	27
43-4181	Reservation and transportation ticket agents and travel clerks ¹	177	18.7	26.1	35	5
43-4999	All other financial, information, and record clerks	304	18.6	15.7	57	5
43-5000	Material recording, scheduling, dispatching, and distributing occupations	4,005	19.0	29.4	763	118
43-5011	Cargo and freight agents	59	12.3	22.5	8	1
43-5021	Couriers and messengers	132	18.3	22.9	25	3
43-5030	Dispatchers	262	15.0	21.5	42	6
43-5031	Police, fire, and ambulance dispatchers	92	15.0	21.5	15	2
43-5032	Dispatchers, except police, fire, and ambulance	170	15.0	21.5	27	4
43-5041	Meter readers, utilities ¹	54	18.4	31.5	9	2
43-5050	Postal service workers	664	6.4	28.9	42	19
43-5051	Postal service clerks	77	6.9	26.4	5	2
43-5052	Postal service mail carriers ¹	334	6.0	31.3	20	10
43-5053	Postal service mail sorters, processors, and processing machine operators	253	6.9	26.4	17	7
43-5061	Production, planning, and expediting clerks ¹	288	16.4	24.2	50	7
43-5071	Shipping, receiving, and traffic clerks	803	18.9	20.5	154	16
43-5081	Stock clerks and order fillers	1,626	25.7	37.0	409	60
43-5111	Weighers, measurers, checkers, and samplers, recordkeeping	81	18.4	25.3	16	2
43-5199	All other material recording, scheduling, dispatching, and distributing workers	34	25.7	37.0	8	1
43-6000	Secretaries and administrative assistants	4,104	12.9	19.2	540	79
43-6011	Executive secretaries and administrative assistants	1,526	12.9	19.2	205	29
43-6012	Legal secretaries	264	12.9	19.2	37	5
43-6013	Medical secretaries	339	12.9	19.2	47	7
43-6014	Secretaries, except legal, medical, and executive	1,975	12.9	19.2	251	38
43-9000	Other office and administrative support workers	4,858	17.0	22.1	838	107

See footnotes at end of table.

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
43-9011	Computer operators	182	14.8	21.3	25	4
43-9020	Data entry and information processing workers	633	18.4	23.0	106	15
43-9021	Data entry keyers	392	18.3	23.6	70	9
43-9022	Word processors and typists	241	18.6	22.0	36	5
43-9031	Desktop publishers	35	9.5	22.6	4	1
43-9041	Insurance claims and policy processing clerks	266	14.9	16.1	40	4
43-9051	Mail clerks and mail machine operators, except postal service	170	17.0	29.9	29	5
43-9061	Office clerks, general	2,991	17.4	22.1	546	66
43-9071	Office machine operators, except computer	96	18.0	25.2	17	2
43-9081	Proofreaders and copy markers ¹	27	19.3	20.5	5	1
43-9111	Statistical assistants	23	10.6	16.0	2	(²)
43-9999	All other secretaries, administrative assistants, and other office support workers	435	14.7	21.2	64	9
45-0000	Farming, fishing, and forestry occupations	1,072	21.5	26.8	235	29
45-1000	Supervisors, farming, fishing, and forestry workers	52	10.8	22.9	6	1
45-2000	Agricultural workers	804	22.5	28.0	185	23
45-2011	Agricultural inspectors	16	21.8	24.3	4	(²)
45-2021	Animal breeders	9	7.2	16.7	1	(²)
45-2041	Graders and sorters, agricultural products	49	21.8	26.5	11	1
45-2090	Miscellaneous agricultural workers	731	22.7	28.3	169	21
45-2091	Agricultural equipment operators	61	22.7	28.3	14	2
45-2092	Farmworkers and laborers, crop, nursery, and greenhouse	617	22.7	28.3	143	17
45-2093	Farmworkers, farm and ranch animals	53	22.7	28.3	12	2
45-3000	Fishing and hunting workers	36	17.4	29.6	6	1
45-3011	Fishers and related fishing workers ¹	36	17.6	28.5	6	1
45-3021	Hunters and trappers ¹	1	12.9	57.9	(²)	(²)
45-4000	Forest, conservation, and logging workers	81	20.3	19.5	16	2
45-4011	Forest and conservation workers	14	17.8	24.6	3	(²)
45-4020	Logging workers	67	20.9	18.4	14	1
45-4021	Fallers	14	20.9	18.4	3	(²)
45-4022	Logging equipment operators	43	20.9	18.4	9	1
45-4023	Log graders and scalers	10	20.9	18.4	2	(²)
45-9099	All other farming, fishing, and forestry workers	96	22.2	24.1	22	2
47-0000	Construction and extraction occupations	7,292	12.8	19.8	1,000	145
47-1000	Supervisors, construction and extraction workers	633	9.2	17.0	63	11
47-1011	First-line supervisors/managers of construction trades and extraction workers ¹	633	9.2	17.0	63	11
47-2000	Construction trades and related workers	5,596	12.8	18.4	774	103
47-2011	Boilermakers ¹	25	6.2	36.4	2	1
47-2020	Brickmasons, blockmasons, and stonemasons	165	12.8	14.9	23	2
47-2021	Brickmasons and blockmasons ¹	148	12.8	14.9	20	2
47-2022	Stonemasons ¹	17	12.8	14.9	2	(²)
47-2031	Carpenters	1,209	14.9	16.3	190	20
47-2040	Carpet, floor, and tile installers and finishers	164	10.1	15.6	18	3
47-2041	Carpet installers	82	10.1	15.6	9	1
47-2042	Floor layers, except carpet, wood, and hard tiles	31	10.1	15.6	3	(²)
47-2043	Floor sanders and finishers	17	10.1	15.6	2	(²)
47-2044	Tile and marble setters	33	10.1	15.6	4	1
47-2050	Cement masons, concrete finishers, and terrazzo workers	188	10.7	20.1	23	4
47-2051	Cement masons and concrete finishers	182	10.7	20.1	22	4
47-2053	Terrazzo workers and finishers	6	10.7	20.1	1	(²)
47-2061	Construction laborers	938	16.3	13.3	163	12
47-2070	Construction equipment operators	416	12.0	24.0	52	10
47-2071	Paving, surfacing, and tamping equipment operators ¹	58	12.9	14.3	8	1
47-2072	Pile-driver operators	5	14.6	16.9	1	(²)
47-2073	Operating engineers and other construction equipment operators	353	11.8	25.7	44	9
47-2080	Drywall installers, ceiling tile installers, and tapers	176	10.4	21.7	20	4
47-2081	Drywall and ceiling tile installers	135	10.4	21.7	16	3
47-2082	Tapers	41	10.4	21.7	5	1
47-2111	Electricians	659	7.6	19.8	56	13

See footnotes at end of table

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
47-2121	Glaziers ¹	49	12.8	20.9	7	1
47-2130	Insulation workers	53	14.6	30.2	8	2
47-2140	Painters and paperhangers	468	14.2	15.1	70	7
47-2141	Painters, construction and maintenance	448	14.3	15.2	68	7
47-2142	Paperhangers ¹	20	12.9	12.7	3	(²)
47-2150	Pipelayers, plumbers, pipefitters, and steamfitters	550	9.5	23.0	57	13
47-2151	Pipelayers	58	9.5	23.0	6	1
47-2152	Plumbers, pipefitters, and steamfitters	492	9.5	23.0	51	11
47-2161	Plasterers and stucco masons ¹	59	12.8	18.3	8	1
47-2171	Reinforcing iron and rebar workers	29	7.0	19.4	2	1
47-2181	Roofers	166	21.1	23.3	38	4
47-2211	Sheet metal workers	305	12.5	24.0	28	5
47-2221	Structural iron and steel workers	78	9.7	19.6	8	2
47-3000	Helpers, construction trades	431	15.4	41.5	71	18
47-3010	Helpers, construction trades	431	15.4	41.5	71	18
47-3011	Helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters	59	15.4	41.5	9	2
47-3012	Helpers—carpenters	97	15.4	41.5	16	4
47-3013	Helpers—electricians	99	15.4	41.5	17	4
47-3014	Helpers—painters, paperhangers, plasterers, and stucco masons	31	15.4	41.5	5	1
47-3015	Helpers—pipelayers, plumbers, pipefitters, and steamfitters	79	15.4	41.5	13	3
47-3016	Helpers—roofers	21	15.4	41.5	4	1
47-3019	All other helpers, construction trades	44	15.4	41.5	7	2
47-4000	Other construction and related workers	354	13.8	19.1	52	7
47-4011	Construction and building inspectors ¹	84	10.1	22.5	9	2
47-4021	Elevator installers and repairers ¹	21	11.2	24.7	3	1
47-4031	Fence erectors	27	11.9	14.8	3	(²)
47-4041	Hazardous materials removal workers	38	16.7	26.4	8	1
47-4051	Highway maintenance workers	154	15.3	14.5	25	2
47-4061	Rail-track laying and maintenance equipment operators	11	14.0	22.6	1	(²)
47-4071	Septic tank servicers and sewer pipe cleaners	18	16.6	26.7	3	(²)
47-4090	Miscellaneous construction and related workers	2	12.0	16.0	(²)	(²)
47-4091	Segmental pavers	2	12.0	16.0	(²)	(²)
47-4999	All other construction trades and related workers	110	12.0	16.0	15	2
47-5000	Extraction workers	167	14.5	27.1	24	5
47-5010	Derrick, rotary drill, and service unit operators, oil, gas, and mining	41	11.8	29.0	5	1
47-5011	Derrick operators, oil and gas ¹	15	11.8	29.0	2	(²)
47-5012	Rotary drill operators, oil and gas ¹	14	11.8	29.0	2	(²)
47-5013	Service unit operators, oil, gas, and mining ¹	13	11.8	29.0	2	(²)
47-5021	Earth drillers, except oil and gas ¹	23	12.8	21.1	3	(²)
47-5031	Explosives workers, ordnance handling experts, and blasters ¹	5	15.5	38.1	1	(²)
47-5040	Mining machine operators	18	15.2	28.4	3	1
47-5041	Continuous mining machine operators ¹	8	15.2	28.4	1	(²)
47-5042	Mine cutting and channeling machine operators ¹	5	15.2	28.4	1	(²)
47-5049	All other mining machine operators ¹	4	15.2	28.4	1	(²)
47-5051	Rock splitters, quarry	3	13.0	24.7	(²)	(²)
47-5061	Rock bolters, mining ¹	4	17.0	18.2	1	(²)
47-5071	Roustabouts, oil and gas ¹	32	15.2	27.7	5	1
47-5081	Helpers—extraction workers ¹	29	18.7	28.2	6	1
47-5099	Extraction workers, all other	12	13.0	24.7	2	(²)
49-0000	Installation, maintenance, and repair occupations	5,696	10.5	22.9	638	131
49-1000	Supervisors of installation, maintenance, and repair workers	444	7.9	25.1	38	11
49-1011	First-line supervisors/managers of mechanics, installers, and repairers	444	7.9	25.1	38	11
49-2000	Electrical and electronic equipment mechanics, installers, and repairers	689	10.4	19.2	74	13
49-2011	Computer, automated teller, and office machine repairers	156	10.7	12.2	18	2
49-2020	Radio and telecommunications equipment installers and repairers	226	10.4	20.7	23	5
49-2021	Radio mechanics	7	10.4	20.7	1	(²)
49-2022	Telecommunications equipment installers and repairers, except line installers	219	10.4	20.7	23	5
49-2090	Miscellaneous electrical and electronic equipment mechanics, installers, and repairers	284	10.2	21.8	31	6
49-2091	Avionics technicians	23	11.3	24.2	3	1

See footnotes at end of table.

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
49-2092	Electric motor, power tool, and related repairers	31	10.7	24.0	3	1
49-2093	Electrical and electronics installers and repairers, transportation equipment	18	12.9	24.4	2	(2)
49-2094	Electrical and electronics repairers, commercial and industrial equipment	85	10.4	22.0	9	2
49-2095	Electrical and electronics repairers, powerhouse, substation, and relay	21	10.4	22.0	2	(2)
49-2096	Electronic equipment installers and repairers, motor vehicles	18	6.4	24.2	1	(2)
49-2097	Electronic home entertainment equipment installers and repairers	43	11.7	19.6	5	1
49-2098	Security and fire alarm systems installers	46	8.0	19.1	4	1
49-2099	All other electrical and electronic equipment mechanics, installers, and repairers	22	10.4	20.7	3	(2)
49-3000	Vehicle and mobile equipment mechanics, installers, and repairers	1,817	10.9	25.8	210	47
49-3011	Aircraft mechanics and service technicians ¹	131	7.7	23.6	11	3
49-3020	Automotive technicians and repairers	1,038	10.9	25.2	121	26
49-3021	Automotive body and related repairers	198	10.4	20.3	22	4
49-3022	Automotive glass installers and repairers	22	12.4	19.0	3	(2)
49-3023	Automotive service technicians and mechanics	818	11.0	26.6	96	22
49-3031	Bus and truck mechanics and diesel engine specialists	267	9.1	25.7	26	7
49-3040	Heavy vehicle and mobile equipment service technicians and mechanics	176	8.8	21.7	16	4
49-3041	Farm equipment mechanics	35	8.8	21.7	3	1
49-3042	Mobile heavy equipment mechanics, except engines	126	8.8	21.7	12	3
49-3043	Rail car repairers	15	8.8	21.7	1	(2)
49-3050	Small engine mechanics	67	6.6	24.8	5	2
49-3051	Motorboat mechanics ¹	22	6.6	24.8	2	1
49-3052	Motorcycle mechanics ¹	15	6.6	24.8	1	(2)
49-3053	Outdoor power equipment and other small engine mechanics ¹	30	6.6	24.8	2	1
49-3090	Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers ¹	102	25.7	42.5	28	4
49-3091	Bicycle repairers	7	25.7	42.5	2	(2)
49-3092	Recreational vehicle service technicians	13	25.7	42.5	4	1
49-3093	Tire repairers and changers	83	25.7	42.5	22	4
49-3099	All other vehicle and mobile equipment mechanics, installers, and repairers	36	11.0	26.6	4	1
49-9000	Other installation, maintenance, and repair occupations	2,746	10.7	21.6	316	59
49-9010	Control and valve installers and repairers	49	11.4	25.0	6	1
49-9011	Mechanical door repairers	11	11.4	25.0	1	(2)
49-9012	Control and valve installers and repairers, except mechanical door	38	11.4	25.0	5	1
49-9021	Heating, air conditioning, and refrigeration mechanics and installers	249	10.9	13.3	31	3
49-9031	Home appliance repairers	42	11.8	23.8	5	1
49-9040	Industrial machinery installation, repair, and maintenance workers	1,628	10.1	19.7	176	32
49-9041	Industrial machinery mechanics	197	9.2	20.1	19	4
49-9042	Maintenance and repair workers, general	1,266	10.6	19.2	145	24
49-9043	Maintenance workers, machinery	92	4.7	22.6	4	2
49-9044	Millwrights	69	9.4	24.3	7	2
49-9045	Refractory materials repairers, except brickmasons	4	9.2	20.1	(2)	(2)
49-9050	Line installers and repairers	268	7.1	28.9	20	8
49-9051	Electrical power-line installers and repairers	101	8.9	31.7	9	3
49-9052	Telecommunications line installers and repairers	167	6.1	27.2	11	5
49-9060	Precision instrument and equipment repairers	64	11.1	28.0	7	2
49-9061	Camera and photographic equipment repairers	7	11.1	28.0	1	(2)
49-9062	Medical equipment repairers	29	11.1	28.0	3	1
49-9063	Musical instrument repairers and tuners	6	11.1	28.0	1	(2)
49-9064	Watch repairers	5	11.1	28.0	1	(2)
49-9069	All other precision instrument and equipment repairers	17	11.1	28.0	2	(2)
49-9090	Miscellaneous installation, maintenance, and repair workers	447	14.5	27.4	70	12
49-9091	Coin, vending, and amusement machine servicers and repairers	43	14.0	24.2	6	1
49-9092	Commercial divers ¹	4	14.8	15.1	1	(2)
49-9093	Fabric menders, except garment	2	10.6	22.7	(2)	(2)
49-9094	Locksmiths and safe repairers ¹	23	11.2	33.4	3	1
49-9095	Manufactured building and mobile home installers	18	9.5	24.3	2	(2)
49-9096	Riggers	14	19.2	22.8	3	(2)
49-9097	Signal and track switch repairers	8	11.7	35.0	1	(2)
49-9098	Helpers—installation, maintenance, and repair workers ¹	150	20.1	33.8	33	5
49-9099	Installation, maintenance, and repair workers, all other	185	10.6	22.7	21	4
51-0000	Production occupations	11,258	12.8	23.8	1,461	268

See footnotes at end of table

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
51-1000	Supervisors, production workers	733	8.0	21.0	62	15
51-1011	First-line supervisors/managers of production and operating workers	733	8.0	21.0	62	15
51-2000	Assemblers and fabricators	2,122	11.2	25.4	233	54
51-2011	Aircraft structure, surfaces, rigging, and systems assemblers	27	6.8	27.4	2	1
51-2020	Electrical, electronics, and electromechanical assemblers	377	6.8	23.6	24	9
51-2021	Coil winders, tapers, and finishers	36	6.8	23.6	2	1
51-2022	Electrical and electronic equipment assemblers	281	6.8	23.6	17	7
51-2023	Electromechanical equipment assemblers	60	6.8	23.6	4	1
51-2031	Engine and other machine assemblers	50	6.3	28.0	3	1
51-2041	Structural metal fabricators and fitters	89	15.7	23.5	14	2
51-2090	Miscellaneous assemblers and fabricators	1,579	12.1	25.9	191	41
51-2091	Fiberglass laminators and fabricators	37	12.1	25.9	5	1
51-2092	Team assemblers	1,174	12.1	25.9	141	30
51-2093	Timing device assemblers, adjusters, and calibrators	7	12.1	25.9	1	(²)
51-2099	All other assemblers and fabricators	361	12.1	25.9	44	9
51-3000	Food processing occupations	757	15.5	22.7	123	17
51-3011	Bakers	173	15.5	23.2	28	4
51-3020	Butchers and other meat, poultry, and fish processing workers	414	15.9	21.9	69	9
51-3021	Butchers and meat cutters	132	15.9	21.9	21	3
51-3022	Meat, poultry, and fish cutters and trimmers	154	15.9	21.9	26	3
51-3023	Slaughterers and meat packers	128	15.9	21.9	22	3
51-3090	Miscellaneous food processing workers	127	14.1	24.8	19	3
51-3091	Food and tobacco roasting, baking, and drying machine operators and tenders	19	13.4	28.6	3	1
51-3092	Food batchmakers ¹	74	13.5	24.6	10	2
51-3093	Food cooking machine operators and tenders	34	16.0	22.9	6	1
51-3099	All other food processing workers	42	15.9	21.9	7	1
51-4000	Metal workers and plastic workers	2,367	10.4	24.2	254	57
51-4010	Computer control programmers and operators	151	7.2	16.5	11	2
51-4011	Computer-controlled machine tool operators, metal and plastic	132	7.2	16.5	10	2
51-4012	Numerical tool and process control programmers	19	7.2	16.5	1	(²)
51-4020	Forming machine setters, operators, and tenders, metal and plastic	188	10.2	26.3	20	5
51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic ¹	98	13.3	33.3	13	3
51-4022	Forging machine setters, operators, and tenders, metal and plastic ¹	45	6.1	14.7	3	1
51-4023	Rolling machine setters, operators, and tenders, metal and plastic	44	7.3	22.6	3	1
51-4030	Machine tool cutting setters, operators, and tenders, metal and plastic	546	10.6	22.1	59	12
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	283	12.5	23.2	37	7
51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic ¹	53	9.0	29.2	5	2
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	104	8.4	19.1	9	2
51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic	75	7.1	19.2	7	1
51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic	31	7.1	17.2	2	1
51-4041	Machinists	387	6.9	23.3	28	9
51-4050	Metal furnace and kiln operators and tenders	31	13.3	22.4	4	1
51-4051	Metal-refining furnace operators and tenders ¹	18	13.3	22.4	2	(²)
51-4052	Pourers and casters, metal ¹	13	13.3	22.4	2	(²)
51-4060	Model makers and patternmakers, metal and plastic	15	6.3	31.9	1	(²)
51-4061	Model makers, metal and plastic	9	6.3	31.9	1	(²)
51-4062	Patternmakers, metal and plastic	6	6.3	31.9	(²)	(²)
51-4070	Molders and molding machine setters, operators, and tenders, metal and plastic	174	11.0	24.9	20	4
51-4071	Foundry mold and coremakers	23	11.0	24.9	3	1
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	151	11.0	24.9	17	4
51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic	99	7.1	27.6	7	3
51-4111	Tool and die makers	109	2.5	22.5	3	2
51-4120	Welding, soldering, and brazing workers	452	16.5	28.2	80	13
51-4121	Welders, cutters, solderers, and brazers	391	16.5	28.2	70	11
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders	61	16.5	28.2	10	2
51-4190	Miscellaneous metalworkers and plastic workers	215	10.0	24.9	22	5
51-4191	Heat treating equipment setters, operators, and tenders, metal and plastic ¹	29	12.9	31.4	4	1

See footnotes at end of table.

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
51-4192	Lay-out workers, metal and plastic	13	6.4	15.2	1	(²)
51-4193	Plating and coating machine setters, operators, and tenders, metal and plastic ¹	44	13.0	21.8	6	1
51-4194	Tool grinders, filers, and sharpeners ¹	26	6.0	32.4	2	1
51-4199	All other metal workers and plastic workers	104	9.5	23.7	10	2
51-5000	Printing occupations	465	10.9	24.0	51	11
51-5010	Bookbinders and bindery workers	98	6.4	26.7	6	3
51-5011	Bindery workers ¹	91	6.4	26.7	6	2
51-5012	Bookbinders ¹	7	6.4	26.7	(²)	(²)
51-5020	Printers	346	12.0	23.3	42	8
51-5021	Job printers	56	10.8	23.5	6	1
51-5022	Prepress technicians and workers	91	6.2	23.4	5	2
51-5023	Printing machine operators	199	14.7	23.2	30	5
51-5099	All other printing workers	21	14.7	23.2	3	(²)
51-6000	Textile, apparel, and furnishings occupations	1,085	15.6	19.3	157	21
51-6011	Laundry and dry-cleaning workers	231	19.1	27.2	47	6
51-6021	Pressers, textile, garment, and related materials	91	21.1	15.7	19	1
51-6031	Sewing machine operators	315	12.5	12.4	33	4
51-6040	Shoe and leather workers	23	13.6	26.1	3	1
51-6041	Shoe and leather workers and repairers ¹	16	14.6	31.4	2	1
51-6042	Shoe machine operators and tenders ¹	7	11.0	13.0	1	(²)
51-6050	Tailors, dressmakers, and sewers	90	16.2	17.4	14	2
51-6051	Sewers, hand	36	16.2	17.4	5	1
51-6052	Tailors, dressmakers, and custom sewers	53	16.2	17.4	8	1
51-6060	Textile machine setters, operators, and tenders	179	12.7	18.1	19	3
51-6061	Textile bleaching and dyeing machine operators and tenders	27	13.2	25.6	3	1
51-6062	Textile cutting machine setters, operators, and tenders	34	11.0	22.1	3	1
51-6063	Textile knitting and weaving machine setters, operators, and tenders ¹	53	10.7	11.2	5	1
51-6064	Textile winding, twisting, and drawing out machine setters, operators, and tenders ¹	66	14.9	18.6	8	1
51-6090	Miscellaneous textile, apparel, and furnishings workers	156	14.7	25.2	22	4
51-6091	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers ¹	27	14.9	19.4	4	1
51-6092	Fabric and apparel patternmakers ¹	11	12.4	46.7	1	1
51-6093	Upholsterers ¹	56	15.5	25.4	8	1
51-6099	All other textile, apparel, and furnishings workers	61	14.3	23.6	9	1
51-7000	Woodworkers	374	11.8	25.7	45	10
51-7011	Cabinetmakers and bench carpenters	147	9.3	25.1	14	4
51-7021	Furniture finishers ¹	39	8.5	20.2	3	1
51-7030	Model makers and patternmakers, wood	9	7.3	29.0	1	(²)
51-7031	Model makers, wood ¹	4	7.3	29.0	(²)	(²)
51-7032	Patternmakers, wood ¹	4	7.3	29.0	(²)	(²)
51-7040	Woodworking machine setters, operators, and tenders	151	15.7	27.0	24	4
51-7041	Sawing machine setters, operators, and tenders, wood	56	18.0	28.3	10	2
51-7042	Woodworking machine setters, operators, and tenders, except sawing	95	14.4	26.3	14	2
51-7099	All other woodworkers ¹	29	10.5	28.9	3	1
51-8000	Plant and system operators	346	7.3	29.4	26	10
51-8010	Power plant operators, distributors, and dispatchers	51	7.1	26.9	4	1
51-8011	Nuclear power reactor operators ¹	3	7.1	26.9	(²)	(²)
51-8012	Power distributors and dispatchers ¹	12	7.1	26.9	1	(²)
51-8013	Power plant operators ¹	35	7.1	26.9	3	1
51-8021	Stationary engineers and boiler operators	55	7.8	18.5	4	1
51-8031	Water and liquid waste treatment plant and system operators ¹	99	7.0	34.4	8	3
51-8090	Miscellaneous plant and system operators	141	7.4	31.0	10	4
51-8091	Chemical plant and system operators ¹	58	7.4	31.0	4	2
51-8092	Gas plant operators ¹	12	7.4	31.0	1	(²)
51-8093	Petroleum pump system operators, refinery operators, and gaugers ¹	39	7.4	31.0	3	1
51-8099	All other plant and system operators ¹	32	7.4	31.0	2	1
51-9000	Other production occupations	3,010	16.3	24.2	510	73
51-9010	Chemical processing machine setters, operators, and tenders	94	13.4	32.0	12	3
51-9011	Chemical equipment operators and tenders ¹	58	13.4	32.0	8	2
51-9012	Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders ¹	36	13.4	32.0	5	1

See footnotes at end of table.

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
51-9020	Crushing, grinding, polishing, mixing, and blending workers	196	13.2	26.1	26	5
51-9021	Crushing, grinding, and polishing machine setters, operators, and tenders	45	13.2	26.1	6	1
51-9022	Grinding and polishing workers, hand	45	13.2	26.1	6	1
51-9023	Mixing and blending machine setters, operators, and tenders	106	13.2	26.1	14	3
51-9030	Cutting workers	109	14.3	20.7	16	2
51-9031	Cutters and trimmers, hand	31	14.3	20.7	5	1
51-9032	Cutting and slicing machine setters, operators, and tenders	77	14.3	20.7	11	2
51-9041	Extruding, forming, pressing, and compacting machine setters, operators, and tenders	73	13.4	26.3	10	2
51-9051	Furnace, kiln, oven, drier, and kettle operators and tenders	31	13.3	23.9	4	1
51-9061	Inspectors, testers, sorters, samplers, and weighers	515	16.3	22.8	86	12
51-9071	Jewelers and precious stone and metal workers ¹	40	6.6	19.9	3	1
51-9080	Medical, dental, and ophthalmic laboratory technicians	94	5.5	21.9	5	2
51-9081	Dental laboratory technicians	47	5.5	21.9	3	1
51-9082	Medical appliance technicians	14	5.5	21.9	1	(²)
51-9083	Ophthalmic laboratory technicians	33	5.5	21.9	2	1
51-9111	Packaging and filling machine operators and tenders	387	15.6	19.9	68	8
51-9120	Painting workers	187	15.7	26.1	31	5
51-9121	Coating, painting, and spraying machine setters, operators, and tenders	103	15.7	26.1	17	3
51-9122	Painters, transportation equipment	50	15.7	26.1	9	1
51-9123	Painting, coating, and decorating workers	34	15.7	26.1	6	1
51-9130	Photographic process workers and processing machine operators	82	15.2	24.7	13	2
51-9131	Photographic process workers	28	15.2	24.7	4	1
51-9132	Photographic processing machine operators	54	15.2	24.7	9	1
51-9141	Semiconductor processors	46	6.1	22.1	4	1
51-9190	Miscellaneous production workers	1,155	19.3	25.5	232	29
51-9191	Cementing and gluing machine operators and tenders ¹	27	13.4	27.2	4	1
51-9192	Cleaning, washing, and metal pickling equipment operators and tenders	18	13.5	29.2	3	1
51-9193	Cooling and freezing equipment operators and tenders	7	14.6	28.0	1	(²)
51-9194	Etchers and engravers ¹	10	7.5	27.5	1	(²)
51-9195	Molders, shapers, and casters, except metal and plastic	46	12.6	23.8	6	1
51-9196	Paper goods machine setters, operators, and tenders	117	13.4	21.2	15	2
51-9197	Tire builders	14	13.4	23.6	2	(²)
51-9198	Helpers—production workers	467	27.9	28.0	135	13
51-9199	All other production workers	449	13.9	23.9	66	11
53-0000	Transportation and material moving occupations	9,828	17.9	22.4	1,670	220
53-1000	Supervisors, transportation and material moving workers	364	9.7	23.5	38	9
53-1011	Aircraft cargo handling supervisors	9	9.7	23.5	1	(²)
53-1021	First-line supervisors/managers of helpers, laborers, and material movers, hand	147	9.7	23.5	15	3
53-1031	First-line supervisors/managers of transportation and material-moving machine and vehicle operators	207	9.7	23.5	21	5
53-2000	Air transportation occupations	144	6.6	26.2	10	4
53-2010	Aircraft pilots and flight engineers	100	6.1	26.7	7	3
53-2011	Airline pilots, copilots, and flight engineers ¹	79	6.1	26.7	5	2
53-2012	Commercial pilots ¹	21	6.1	26.7	1	1
53-2020	Air traffic controllers and airfield operations specialists	32	6.9	25.7	2	1
53-2021	Air traffic controllers ¹	26	6.9	25.7	2	1
53-2022	Airfield operations specialists ¹	6	6.9	25.7	(²)	(²)
53-2099	All other air transportation workers	12	9.7	23.5	1	(²)
53-3000	Motor vehicle operators	4,136	16.2	15.1	732	62
53-3011	Ambulance drivers and attendants, except emergency medical technicians	17	20.7	10.2	4	(²)
53-3020	Bus drivers	654	15.0	21.8	106	14
53-3021	Bus drivers, transit and intercity	202	15.0	21.8	33	4
53-3022	Bus drivers, school	453	15.0	21.8	74	10
53-3030	Driver/sales workers and truck drivers	3,221	16.3	14.1	575	45
53-3031	Driver/sales workers	431	15.0	16.3	66	7
53-3032	Truck drivers, heavy and tractor-trailer	1,767	15.0	16.3	291	29
53-3033	Truck drivers, light or delivery services	1,022	19.1	9.2	218	9
53-3041	Taxi drivers and chauffeurs	132	19.1	9.2	28	1
53-3099	All other motor vehicle operators	111	15.5	14.1	19	2

See footnotes at end of table.

Table V-5. Total and net replacement rates and annual average replacement needs, 2002-12—Continued

(Numbers in thousands)

2002 national employment matrix occupation		Total employment, 2002	Replacement rate (Percent)		Annual average replacement needs, 2002-12	
			Total, 2001-02	Net, 2002-12	Total	Net
53-4000	Rail transportation occupations	101	12.6	25.9	12	3
53-4010	Locomotive engineers and operators ¹	33	12.8	29.3	4	1
53-4021	Railroad brake, signal, and switch operators ¹	15	11.9	10.7	2	(²)
53-4031	Railroad conductors and yardmasters ¹	38	13.0	27.1	5	1
53-4039	Subway, streetcar operators and all other rail transportation workers	15	12.0	30.7	2	(²)
53-5000	Water transportation occupations	68	10.9	32.8	8	2
53-5011	Sailors and marine oilers ¹	27	10.7	35.3	3	1
53-5020	Ship and boat captains and operators	29	12.4	28.5	4	1
53-5021	Captains, mates, and pilots of water vessels ¹	25	12.4	28.5	3	1
53-5022	Motorboat operators ¹	4	12.4	28.5	1	(²)
53-5031	Ship engineers	8	7.1	44.0	1	(²)
53-5099	All other water transportation workers	4	9.7	23.5	(²)	(²)
53-6000	Other transportation workers	294	17.2	34.7	53	10
53-6011	Bridge and lock tenders	4	11.8	31.4	(²)	(²)
53-6021	Parking lot attendants ¹	107	15.5	29.7	18	3
53-6031	Service station attendants	107	21.4	44.9	23	5
53-6041	Traffic technicians	6	14.1	30.1	1	(²)
53-6051	Transportation inspectors	29	14.5	23.8	4	1
53-6099	All other related transportation workers	40	14.1	30.1	6	1
53-7000	Material moving occupations	4,722	20.6	27.6	1,017	130
53-7011	Conveyor operators and tenders	58	13.9	28.7	9	2
53-7021	Crane and tower operators	50	8.9	21.8	5	1
53-7030	Dredge, excavating, and loading machine operators	87	17.2	27.5	16	2
53-7031	Dredge operators ¹	3	17.2	27.5	1	(²)
53-7032	Excavating and loading machine and dragline operators ¹	80	17.2	27.5	14	2
53-7033	Loading machine operators, underground mining ¹	4	17.2	27.5	1	(²)
53-7041	Hoist and winch operators ¹	9	9.9	31.7	1	(²)
53-7051	Industrial truck and tractor operators	594	14.6	18.9	92	11
53-7060	Laborers and material movers, hand	3,659	21.8	29.1	830	107
53-7061	Cleaners of vehicles and equipment	344	20.7	34.8	74	12
53-7062	Laborers and freight, stock, and material movers, hand	2,231	22.9	32.7	527	73
53-7063	Machine feeders and offbearers	164	18.8	27.3	31	4
53-7064	Packers and packagers, hand	920	20.1	8.7	198	17
53-7070	Pumping station operators	32	12.6	23.3	4	1
53-7071	Gas compressor and gas pumping station operators	7	12.6	23.3	1	(²)
53-7072	Pump operators, except wellhead pumps	13	12.6	23.3	2	(²)
53-7073	Wellhead pumps	11	12.6	23.3	1	(²)
53-7081	Refuse and recyclable material collectors ¹	134	29.3	25.6	43	3
53-7111	Shuttle car operators	3	19.3	24.9	1	(²)
53-7121	Tank car, truck, and ship loaders	17	19.6	27.8	3	(²)
53-7199	Material moving workers, all other	78	18.0	26.8	15	2

¹ One or more Current Population Survey (CPS) proxy occupations may be used to estimate CPS-based data. See Chapter III.

² Less than 500.

Chapter VI. Education and Training Statistics

Data on the number of awards and degrees earned during 2001–02 by type of educational program and detailed field of study were collected in fall 2002 through the Integrated Postsecondary Education Data System (IPEDS) Web-based data collection system of the National Center for Education Statistics (NCES), U.S. Department of Education. These data, covering the period from July 1, 2001, to June 30, 2002, are presented in Table VI–1. The NCES surveyed institutions of higher education that offered awards at the bachelor's-degree level and higher, institutions with 2-year programs, and public and private institutions with programs of less than 2 years. The 1990 version of the Classification of Instructional Programs was used to categorize the data.

More than 3 million postsecondary awards and degrees were earned during 2001–02: about 626,000 awards and 2.6 million degrees. Formal degrees earned included 606,000 associate degrees, 1.4 million bachelor's degrees, 491,000 master's degrees, 45,000 doctoral degrees, and 82,000 first professional degrees.

Nondegree formal awards for the completion of 1- to 4-year curricula totaled 307,000 during 2001–02, while awards earned for the completion of programs of less than 1 year numbered 319,000. The majority of both types of awards were earned in personal and miscellaneous services, computer and information sciences, mechanic and repairer occupations, health professions and related sciences, and business management and administrative services. A significant number of awards for curricula of under 1 year also were earned in programs providing training for protective service occupations and transportation and material-moving occupations.

Associate degrees earned totaled 606,000, up about 24 percent from 12 years earlier. Almost two-thirds were earned in three disciplines: Liberal arts and sciences, general studies, and humanities; business management and administrative services; and health professions and related sciences. According to the most recent set of NCES projections, which used a base year of 2000–01, the number of earned associate degrees is expected to rise to 699,000 by 2012–13, an increase of 21 percent over the 2000–01 figure.

About 1,375,000 bachelor's degrees were earned during 2001–02, an increase of 29 percent over the 1989–90 figure. Approximately 40 percent were earned in three

disciplines: Business management and administrative services; education; and social sciences and history. Over the period from 1989–90 to 2001–2002, the number of degrees earned increased substantially in nearly all disciplines, including computer and information sciences (up 21,000), visual and performing arts (30,000), biological and life sciences (26,000), and psychology (27,000). NCES projects the number of earned bachelor's degrees to rise to 1,509,000 by 2012–13, an increase of 21 percent from 2000–01.

Some 491,000 master's degrees were granted in 2001–02, about 49 percent more than in 1989–90. More than 60 percent were earned in education, business management and administrative services, or health professions and related sciences. Nearly all disciplines registered increases in degrees earned over the period beginning in 1989–90 and ending in 2001–02. Some of the largest increases were in education (up 51,000), business administration and management (37,000), and health sciences and related professions (23,000). NCES projects the number of earned master's degrees to increase to 556,000 by 2012–13, an increase of 19 percent over the 2000–01 figure.

Doctoral degrees totaled 45,000 during 2001–02, up about 14 percent from 12 years earlier. Nearly half were earned in education, engineering, psychology, or biological and life sciences. Almost all disciplines posted increases in degrees earned over the period from 1989–90 to 2001–02. NCES projects the number of earned doctoral degrees to grow to 47,000 by 2012–13, an increase of 5 percent from 2000–01.

About 82,000 first professional degrees were earned during 2001–02, approximately 13 percent more than in 1989–90. Virtually all were earned in law and legal studies, health professions and related sciences, and theological studies and religious vocations. NCES projects the number of earned first professional degrees to rise to 96,000 by 2012–13, an increase of 20 percent over the 2000–01 figure.

Information on obtaining data on postsecondary education from NCES is available on the Internet. Access the NCES site (<http://nces.ed.gov>) for the Digest of Education Statistics, IPEDS data back to 1989–90, data from other statistical series and more information on projections of education statistics.

Table VI-1. Earned awards and degrees, by field of study, 2001-02

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
Total, all programs		318,903	306,661	605,697	1,375,026	490,834	44,923	82,388
01	Agricultural business and production	2,825	2,389	4,245	6,113	558	175	-
01 01	Agricultural business and management	661	757	836	4,042	416	135	-
01 0101	Agricultural business and management, general	193	124	437	951	65	-	-
01 0102	Agricultural business/agribusiness operations	-	25	173	1,569	26	-	-
01 0103	Agricultural economics	-	-	4	888	317	135	-
01 0104	Farm and ranch management	458	608	129	96	6	-	-
01 0199	Agricultural business and management, other	10	-	93	538	2	-	-
01 02	Agricultural mechanization	308	186	303	279	2	-	-
01 0201	Agricultural mechanization, general	27	63	139	252	2	-	-
01 0204	Agricultural power machinery operator	281	83	151	-	-	-	-
01 0299	Agricultural mechanization, other	-	40	13	27	-	-	-
01 03	Agricultural production workers and managers	86	394	695	248	53	9	-
01 0301	Agricultural production workers and managers, general	8	199	304	57	9	-	-
01 0302	Agricultural animal husbandry and production management	43	186	326	148	1	-	-
01 0303	Aquaculture operations and production management	35	6	20	31	38	6	-
01 0304	Crop production operations and management	-	2	45	12	5	3	-
01 0399	Agricultural production workers and managers, other	-	1	-	-	-	-	-
01 04	Agricultural and food products processing	3	15	16	244	13	7	-
01 05	Agricultural supplies and related services	210	74	362	256	-	-	-
01 0501	Agricultural and supplies retailing and wholesaling	20	8	107	78	-	-	-
01 0505	Animal trainer	15	-	51	-	-	-	-
01 0507	Equestrian/equine studies, horse management and training	92	62	178	178	-	-	-
01 0599	Agricultural supplies and related services, other	83	4	26	-	-	-	-
01 06	Horticulture services operations and management	1,022	906	1,933	758	41	16	-
01 0601	Horticulture services operations and management, general	595	380	677	214	29	10	-
01 0603	Ornamental horticulture operations and management	101	167	386	246	12	3	-
01 0604	Greenhouse operations and management	17	14	25	-	-	-	-
01 0605	Landscaping operations and management	199	208	368	147	-	-	-
01 0606	Nursery operations and management	42	93	67	-	-	-	-
01 0607	Turf management	58	28	349	142	-	-	-
01 0699	Horticulture services operations and management, other	10	16	61	9	-	3	-
01 07	International agriculture	-	-	-	27	8	-	-
01 99	Agricultural business and production, other	535	57	100	259	25	8	-
01 9999	Agricultural business and production, other	535	57	100	259	25	8	-
02	Agricultural sciences	128	88	959	8,780	1,692	619	-
02 01	Agriculture/agricultural sciences	13	13	421	1,382	204	6	-
02 0101	Agriculture/agricultural sciences, general	13	13	421	1,316	184	3	-
02 0102	Agricultural extension	-	-	-	66	20	3	-
02 02	Animal sciences	24	50	366	4,092	454	193	-
02 0201	Animal sciences, general	11	32	144	3,583	369	145	-
02 0202	Agricultural animal breeding and genetics	-	-	-	51	5	10	-
02 0203	Agricultural animal health	-	-	43	-	7	-	-
02 0204	Agricultural animal nutrition	-	-	-	-	2	5	-
02 0205	Agricultural animal physiology	-	-	-	-	3	4	-
02 0206	Dairy science	13	14	10	121	19	2	-
02 0209	Poultry	-	2	41	101	24	9	-
02 0299	Animal sciences, other	-	2	128	236	25	18	-
02 03	Food sciences and technology	81	18	12	621	301	133	-
02 04	Plant sciences	10	7	104	2,303	557	224	-
02 0401	Plant sciences, general	-	-	8	402	80	41	-
02 0402	Agronomy and crop science	-	3	22	673	237	105	-
02 0403	Horticulture science	9	3	62	943	101	42	-
02 0405	Plant breeding and genetics	-	-	-	-	7	4	-
02 0406	Agricultural plant pathology	-	-	-	22	10	9	-
02 0407	Agricultural plant physiology	-	-	-	-	3	5	-
02 0408	Plant protection (pest management)	1	1	11	51	20	3	-
02 0409	Range science and management	-	-	1	117	48	9	-
02 0499	Plant sciences, other	-	-	-	95	51	6	-
02 05	Soil sciences	-	-	-	82	84	49	-
02 99	Agriculture/agricultural sciences, other	-	-	56	300	92	14	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
03	Conservation and renewable natural resources	982	164	1,372	9,420	2,350	377	-
03 01	Natural resources conservation	70	57	360	5,793	1,279	139	-
03 0101	Natural resources conservation, general	69	55	238	1,309	381	54	-
03 0102	Environmental science/studies	1	2	122	4,484	898	85	-
03 02	Natural resources management and protective services	806	25	285	500	225	4	-
03 0201	Natural resources management and policy	14	6	107	448	221	4	-
03 0203	Natural resources law enforcement and protective services	9	1	31	27	-	-	-
03 0299	Natural resources management and protective services, other	783	18	147	55	4	-	-
03 03	Fishing and fisheries sciences and management	40	2	114	162	87	30	-
03 04	Forest production and processing	11	37	327	174	19	22	-
03 0401	Forest harvesting and production technology/technician	3	17	249	141	19	22	-
03 0404	Forest products technology/technician	8	19	47	7	-	-	-
03 0499	Forestry production and processing, other	-	1	31	26	-	-	-
03 05	Forestry and related sciences	40	41	129	1,302	525	131	-
03 0501	Forestry, general	13	35	86	585	331	81	-
03 0502	Forestry sciences	-	1	5	222	93	25	-
03 0506	Forest management	5	-	21	180	17	5	-
03 0509	Wood science and pulp/paper technology	2	3	14	175	23	6	-
03 0599	Forestry and related sciences, other	20	2	3	140	61	14	-
03 06	Wildlife and wildlands management	13	2	153	1,029	164	26	-
03 99	Conservation and renewable natural resources, other	2	-	4	430	51	25	-
04	Architecture and related programs	156	114	444	8,901	4,591	183	-
04 02	Architecture	86	-	32	5,175	2,485	60	-
04 03	City/urban, community and regional planning	-	1	-	469	1,296	90	-
04 04	Architectural environmental design	-	-	-	886	54	8	-
04 05	Interior architecture	3	112	338	717	32	-	-
04 06	Landscape architecture	-	-	23	972	381	-	-
04 07	Architectural urban design and planning	-	-	-	-	131	4	-
04 99	Architecture and related programs, other	77	1	51	682	212	21	-
05	Area, ethnic, and cultural studies	263	96	321	8,070	1,605	216	-
05 01	Area studies	93	24	11	4,418	1,010	154	-
05 0101	African studies	8	-	-	41	21	5	-
05 0102	American studies/civilization	-	5	8	1,766	225	76	-
05 0103	Asian studies	13	-	3	512	95	1	-
05 0104	East Asian studies	-	11	-	394	119	20	-
05 0105	Eastern European area studies	-	-	-	28	16	-	-
05 0106	European studies	-	-	-	168	7	-	-
05 0107	Latin American studies	33	6	-	529	209	7	-
05 0108	Middle Eastern studies	5	-	-	73	86	25	-
05 0109	Pacific area studies	-	-	-	10	6	-	-
05 0110	Russian and Slavic area studies	12	-	-	114	78	-	-
05 0111	Saravali area studies	-	-	-	34	3	1	-
05 0112	South Asian studies	-	-	-	10	6	4	-
05 0113	Southeast Asian studies	-	-	-	9	11	-	-
05 0114	Western European studies	18	-	-	31	29	2	-
05 0115	Canadian studies	-	-	-	2	-	-	-
05 0199	Area studies, other	4	2	-	697	99	13	-
05 02	Ethnic and cultural studies	170	62	302	3,150	413	47	-
05 0201	Afro-American (Black) studies	9	17	-	839	70	22	-
05 0202	American Indian/Native American studies	-	7	33	126	19	-	-
05 0203	Hispanic-American studies	42	-	-	336	38	2	-
05 0204	Islamic studies	-	-	-	3	2	1	-
05 0205	Jewish/Judaic studies	2	-	227	217	43	3	-
05 0206	Asian-American studies	-	-	-	152	9	-	-
05 0207	Women's studies	84	37	5	1,031	106	7	-
05 0299	Ethnic and cultural studies, other	33	1	37	446	126	12	-
05 99	Area, ethnic, and cultural studies, other	-	10	8	502	182	15	-
08	Marketing operations/marketing and distribution	9,444	1,701	5,836	5,328	626	3	-
08 01	Apparel and accessories marketing operations	34	48	1,735	1,249	24	1	-
08 0101	Apparel and accessories marketing operations, general	17	6	27	89	3	-	-
08 0102	Fashion merchandising	17	42	1,735	1,052	3	1	-
08 0199	Apparel and accessories marketing operations, other	-	-	33	108	18	-	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curricula of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
08 02	Business and personal services marketing operations	30	62	194	19	=	=	=
08 0204	Business services marketing operations	18	62	5	=	=	=	=
08 0205	Personal services marketing operations	=	=	123	=	=	=	=
08 0299	Business and personal services marketing operations, other	12	=	66	19	=	=	=
08 03	Entrepreneurship	81	12	59	307	117	=	=
08 04	Financial services marketing operations	3	8	36	48	=	=	=
08 05	Fashion marketing operations	193	249	3	=	=	=	=
08 06	Food products retailing and wholesaling operations	74	23	5	80	10	=	=
08 07	General retailing and wholesaling operations and skills	2,548	509	2,315	2,649	378	2	=
08 0701	Auctioneering	12	=	=	=	=	=	=
08 0704	General buying operations	12	28	30	56	=	=	=
08 0705	General retailing operations	214	80	531	160	=	=	=
08 0706	General selling skills and sales operations	679	153	627	518	=	=	=
08 0708	General marketing operations	114	234	638	1,855	378	2	=
08 0709	General distribution operations	24	1	55	=	=	=	=
08 0799	General retailing and wholesaling operations and skills, other	1,490	13	436	60	=	=	=
08 08	Home and office products marketing operations	1	1	8	39	=	=	=
08 0809	Home products marketing operations	1	=	8	39	=	=	=
08 0810	Office products marketing operations	=	=	=	=	=	=	=
08 0899	Home and office products marketing operations, other	=	1	=	=	=	=	=
08 09	Hospitality and recreation marketing operations	20	31	148	110	=	=	=
08 0901	Hospitality and recreation marketing operations, general	6	20	107	4	=	=	=
08 0902	Hotel/motel services marketing operations	9	8	13	=	=	=	=
08 0903	Recreational products/services marketing operations	=	2	24	70	=	=	=
08 0906	Food sales operations	=	1	2	36	=	=	=
08 0999	Hospitality and recreation marketing operations, other	5	=	=	=	=	=	=
08 10	Insurance marketing operations	5,564	1	5	=	=	=	=
08 11	Tourism and travel services marketing operations	780	582	806	227	4	=	=
08 1104	Tourism promotion operations	40	318	198	165	1	=	=
08 1105	Travel services marketing operations	359	59	362	18	3	=	=
08 1199	Tourism and travel services marketing operations, other	381	205	246	44	=	=	=
08 12	Vehicle and petroleum products marketing operations	73	54	100	191	=	=	=
08 1203	Vehicle parts and accessories marketing operations	73	54	29	24	=	=	=
08 1206	Vehicle marketing operations	=	=	71	167	=	=	=
08 1299	Vehicles and petroleum products marketing operations, other	=	=	=	=	=	=	=
08 13	Health products and services marketing operations	=	=	=	11	=	=	=
08 99	Marketing operations/marketing and distribution, other	46	121	364	398	93	=	=
09	Communications	962	1,009	2,832	65,268	5,520	374	=
09 01	Communications, general	50	7	931	32,225	2,128	237	=
09 02	Advertising	33	188	609	3,894	270	1	=
09 04	Journalism and mass communications	61	24	403	16,343	1,675	77	=
09 0401	Journalism	51	12	230	10,743	1,377	28	=
09 0402	Broadcast journalism	=	3	112	706	15	=	=
09 0403	Mass communications	10	6	45	4,368	227	48	=
09 0499	Journalism and mass communications, other	=	3	16	526	56	1	=
09 05	Public relations and organizational communications	26	=	55	3,647	325	=	=
09 07	Radio and television broadcasting	224	555	494	6,052	289	8	=
09 99	Communications, other	568	255	340	3,107	633	51	=
10	Communications technologies	1,687	1,404	2,051	1,174	549	9	=
10 01	Communications technology	1,687	1,404	2,051	1,174	549	9	=
10 0101	Educational/instructional media technology/technician	34	93	346	16	79	=	=
10 0103	Photographic technology/technician	72	600	176	15	=	=	=
10 0104	Radio and television broadcasting technology/technician	716	321	832	551	312	9	=
10 0199	Communications technologies/technicians, other	865	390	697	592	158	=	=
11	Computer and information sciences	21,020	17,036	31,813	48,993	16,236	750	=

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
11 01	Computer and information sciences, general	5,710	4,006	9,451	27,420	9,556	551	-
11 02	Computer programming	4,071	3,561	4,840	615	160	3	-
11 03	Data-processing technology/technician	2,435	2,091	2,774	257	3	-	-
11 04	Information science and systems	908	1,322	4,921	10,185	3,235	60	-
11 05	Computer systems analysis	585	1,072	768	261	184	2	-
11 07	Computer science	256	241	1,638	7,562	1,566	92	-
11 99	Computer and information sciences, other	7,055	4,743	7,401	2,673	1,531	42	-
12	Personal and miscellaneous services	31,244	56,866	10,166	396	1	-	-
12 02	Gaming and sports officiating services	196	30	4	-	-	-	-
12 0203	Card dealer	179	30	-	-	-	-	-
12 0299	Gaming and sports officiating services, other	17	-	4	-	-	-	-
12 03	Funeral services and mortuary science	80	246	1,199	175	-	-	-
12 04	Cosmetic services	26,120	50,455	1,110	15	-	-	-
12 0401	Cosmetic services, general	2,829	197	4	-	-	-	-
12 0402	Barber/hairstylist	341	3,237	15	-	-	-	-
12 0403	Cosmetologist	4,672	42,790	242	1	-	-	-
12 0404	Electrolysis technician	51	11	-	-	-	-	-
12 0405	Massage	6,198	3,105	790	14	-	-	-
12 0406	Makeup artist	2,515	211	-	-	-	-	-
12 0499	Cosmetic services, other	7,514	904	59	-	-	-	-
12 05	Culinary arts and related services	2,372	5,768	7,807	206	1	-	-
12 0501	Baker/pastry chef	471	376	662	17	-	-	-
12 0502	Bartender/mixologist	329	3	-	-	-	-	-
12 0503	Culinary arts/chef training	976	4,633	6,462	154	-	-	-
12 0504	Food and beverage/restaurant operations manager	91	102	506	2	-	-	-
12 0505	Kitchen personnel/cook and assistant training	271	149	43	-	-	-	-
12 0506	Meatcutter	95	91	-	-	-	-	-
12 0507	Water/waitress and dining room manager	-	-	-	-	-	-	-
12 0599	Culinary arts and related services, other	139	414	134	33	1	-	-
12 99	Personal and miscellaneous services, other	2,476	387	46	-	-	-	-
13	Education	2,869	1,533	9,399	112,392	137,801	7,030	-
13 01	Education, general	97	83	3,195	2,760	20,072	1,203	-
13 02	Bilingual/bicultural education	20	-	16	96	1,472	17	-
13 03	Curriculum and instruction	5	1	-	1	12,635	848	-
13 04	Education administration and supervision	17	6	1	30	17,469	2,508	-
13 0401	Education administration and supervision, general	17	1	-	5	12,336	1,818	-
13 0402	Administration of special education	-	-	-	-	14	2	-
13 0403	Adult and continuing education administration	-	-	-	14	181	83	-
13 0404	Educational supervision	-	-	-	-	841	40	-
13 0405	Elementary, middle, and secondary education administration	-	-	-	10	2,745	106	-
13 0406	Higher education administration	-	-	-	-	493	241	-
13 0407	Community and junior college education administration	-	-	-	-	30	-	-
13 0499	Education administration and supervision, other	-	5	1	1	829	218	-
13 05	Educational/instructional media design	11	-	20	123	2,299	60	-
13 06	Educational evaluation, research and statistics	-	-	-	-	103	74	-
13 0601	Educational evaluation and research	-	-	-	-	20	17	-
13 0603	Educational statistics and research methods	-	-	-	-	30	27	-
13 0604	Educational assessment, testing and measurement	-	-	-	-	37	19	-
13 0699	Educational evaluation, research and statistics, other	-	-	-	-	16	11	-
13 07	International and comparative education	-	-	-	-	86	3	-
13 08	Educational psychology	-	-	-	104	1,470	418	-
13 09	Social and philosophical foundations of education	-	-	-	4	718	106	-
13 10	Special education, total	19	142	348	9,522	11,381	166	-
13 1001	Special education, general	19	15	147	7,311	9,131	139	-
13 1003	Education of the deaf and hearing impaired	-	4	42	257	208	4	-
13 1004	Education of the gifted and talented	-	-	-	2	175	-	-
13 1005	Education of the emotionally handicapped	-	2	-	202	191	4	-
13 1006	Education of the mentally handicapped	-	3	-	330	84	-	-
13 1007	Education of the multiple handicapped	-	-	-	61	258	2	-
13 1008	Education of the physically handicapped	-	1	3	15	28	2	-
13 1009	Education of the blind and visually handicapped	-	-	-	34	61	-	-
13 1011	Education of specific learning disabled	-	4	-	382	600	5	-
13 1012	Education of the speech impaired	-	-	1	512	213	-	-
13 1013	Education of the autistic	-	-	-	-	1	-	-
13 1099	Special education, other	-	113	155	416	431	10	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curricula of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
13.11	Student counseling and personnel services	-	4	-	31	12,432	343	-
13.1101	Counselor education counseling and guidance services	-	4	-	30	11,899	336	-
13.1102	College/postsecondary student counseling and personnel services	-	-	-	1	533	7	-
13.12	General teacher education	186	270	4,126	64,044	28,534	286	-
13.1201	Adult and continuing teacher education	41	63	60	38	822	107	-
13.1202	Elementary teacher education	-	110	1,560	48,970	14,207	58	-
13.1203	Junior high/intermediate/middle school teacher education	-	-	8	1,752	896	2	-
13.1204	Pre-elementary/early childhood/kindergarten teacher education	139	95	1,690	7,062	2,100	27	-
13.1205	Secondary teacher education	-	-	446	4,360	5,307	42	-
13.1299	Teacher education, multiple levels	3	2	173	484	3,057	43	-
13.13	Teacher education, specific academic and vocational programs	462	472	507	33,599	19,283	680	-
13.1301	Agricultural teacher education (vocational)	-	-	23	652	323	39	-
13.1302	Art teacher education	-	4	21	1,706	678	25	-
13.1303	Business teacher education (vocational)	-	1	8	670	320	4	-
13.1304	Driver and safety teacher education	24	-	-	1	9	-	-
13.1305	English teacher education	4	8	15	2,588	877	17	-
13.1306	Foreign languages teacher education	-	-	5	192	215	10	-
13.1307	Health teacher education	71	-	33	1,780	690	42	-
13.1308	Home economics teacher education (vocational)	-	-	9	337	87	5	-
13.1309	Technology teacher education/industrial arts teacher education	17	5	11	1,134	321	6	-
13.1310	Marketing operations teacher education/marketing and distributive teacher education (vocational)	-	-	-	61	7	6	-
13.1311	Mathematics teacher education	22	5	10	1,535	900	47	-
13.1312	Music teacher education	-	6	21	3,456	801	79	-
13.1314	Physical education teaching and coaching	3	10	278	11,887	3,083	145	-
13.1315	Reading teacher education	-	-	7	161	5,563	53	-
13.1316	Science teacher education, general	-	4	8	1,155	817	35	-
13.1317	Social science teacher education	-	2	1	785	144	3	-
13.1318	Social studies teacher education	-	14	-	1,874	549	1	-
13.1319	Technical teacher education (vocational)	257	6	29	197	213	89	-
13.1320	Trade and industrial education (vocational)	36	24	13	1,148	297	21	-
13.1321	Computer teacher education	1	-	-	10	1,443	7	-
13.1322	Biology teacher education	-	4	-	369	156	-	-
13.1323	Chemistry teacher education	-	-	-	52	22	-	-
13.1324	Drama and dance teacher education	-	4	-	116	39	-	-
13.1325	French language teacher education	-	-	-	57	23	-	-
13.1326	German language teacher education	-	-	-	17	2	-	-
13.1327	Health occupations teacher education (vocational)	-	-	5	41	42	1	-
13.1328	History teacher education	-	-	7	603	48	-	-
13.1329	Physics teacher education	-	-	-	24	13	-	-
13.1330	Spanish language teacher education	-	2	-	362	91	-	-
13.1331	Speech teacher education	-	-	1	64	8	-	-
13.1399	Teacher education, specific academic and vocational programs, other	27	373	2	554	1,404	45	-
13.14	Teaching English as a second language/foreign language	1,274	116	10	151	1,655	22	-
13.15	Teacher assistant/aide	268	318	750	-	-	-	-
13.99	Education, other	510	121	426	1,927	8,192	296	-
14	Engineering	212	94	1,761	61,042	26,303	5,198	-
14.01	Engineering, general	1	26	1,202	1,802	1,350	180	-
14.02	Aerospace, aeronautical, and astronautical engineering	-	-	-	1,772	682	193	-
14.03	Agricultural engineering	-	-	5	676	155	69	-
14.04	Architectural engineering	-	-	5	515	58	2	-
14.05	Bioengineering and biomedical engineering	-	-	-	1,479	676	217	-
14.06	Ceramic sciences and engineering	-	-	-	154	31	15	-
14.07	Chemical engineering	-	-	28	5,610	984	605	-
14.08	Civil engineering	4	-	13	7,937	3,323	574	-
14.0801	Civil engineering, general	1	-	12	7,735	3,171	555	-
14.0802	Geotechnical engineering	-	-	-	-	2	-	-
14.0803	Structural engineering	-	-	-	35	9	-	-
14.0804	Transportation and highway engineering	-	-	-	1	81	3	-
14.0805	Water resources engineering	-	-	-	5	31	14	-
14.0899	Civil engineering, others	3	-	1	161	29	2	-
14.09	Computer engineering	3	43	87	5,687	1,674	126	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curricula of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
14.10	Electrical, electronics, and communications engineering	129	3	105	13,456	6,639	1,235	-
14.11	Engineering mechanics	45	-	-	132	121	41	-
14.12	Engineering physics	-	-	-	295	24	12	-
14.13	Engineering science	-	1	60	267	351	45	-
14.14	Environmental/environmental health engineering	22	1	28	463	570	93	-
14.15	Geological engineering	-	-	-	126	22	8	-
14.16	Geophysical engineering	-	-	-	20	4	-	-
14.17	Industrial/manufacturing engineering	1	1	47	3,694	2,061	233	-
14.18	Materials engineering	2	-	-	529	467	263	-
14.19	Mechanical engineering	-	-	65	13,288	3,400	773	-
14.20	Metallurgical engineering	-	-	-	180	51	38	-
14.21	Mining and mineral engineering	-	-	-	113	49	8	-
14.22	Naval architecture and marine engineering	-	11	-	216	53	5	-
14.23	Nuclear engineering	-	-	6	150	123	60	-
14.24	Ocean engineering	-	-	-	104	75	19	-
14.25	Petroleum engineering	-	-	-	295	211	37	-
14.27	Systems engineering	-	-	29	491	566	46	-
14.28	Textile sciences and engineering	-	-	-	220	50	17	-
14.29	Engineering design	-	5	16	25	-	-	-
14.30	Engineering/industrial management	4	1	33	305	1,335	43	-
14.31	Materials science	-	-	10	91	70	64	-
14.32	Polymer/plastics engineering	-	-	-	87	72	51	-
14.99	Engineering, other	1	2	22	863	1,056	126	-
15.	Engineering-related technology	13,278	12,913	34,182	14,472	897	15	-
15.01	Architectural engineering technology	69	129	1,274	732	-	-	-
15.02	Civil engineering/civil technology	34	98	1,121	395	-	-	-
15.03	Electrical and electronic engineering-related technology	4,772	4,687	18,625	4,127	7	-	-
15.0301	Computer engineering technology/technician	2,965	610	3,794	481	1	-	-
15.0303	Electrical/electronic and communications engineering technology/technician	1,176	2,525	8,437	2,655	6	-	-
15.0304	Laser and optical technology/technician	14	23	110	1	-	-	-
15.0399	Electrical and electronic engineering-related technologies/technicians, other	617	1,529	6,284	990	-	-	-
15.04	Electromechanical instrumentation and maintenance technology	4,922	3,565	4,201	402	2	3	-
15.0401	Biomedical engineering-related technology/technician	3	18	206	89	2	3	-
15.0402	Computer maintenance technology/technician	4,452	2,553	2,473	1	-	-	-
15.0403	Electromechanical technology/technician	288	517	718	44	-	-	-
15.0404	Instrumentation technology/technician	41	200	475	4	-	-	-
15.0405	Robotics technology/technicians	47	113	243	257	-	-	-
15.0499	Electromechanical instrumentation and maintenance technologies/technicians, other	91	164	86	7	-	-	-
15.05	Environmental control technologies	1,303	2,312	1,221	147	117	-	-
15.0501	Heating, air-conditioning, and refrigeration technology/technician	1,011	2,092	626	14	-	-	-
15.0503	Energy management and system technology/technician	-	14	31	24	14	-	-
15.0506	Water quality and wastewater treatment technology/technician	204	62	175	32	-	-	-
15.0507	Environmental and pollution control technology/technician	71	61	232	59	45	-	-
15.0599	Environmental control technologies/technicians, other	15	83	157	18	58	-	-
15.06	Industrial production technologies	659	683	1,884	3,425	258	4	-
15.0603	Industrial/manufacturing technology/technician	541	488	1,312	2,733	240	4	-
15.0607	Plastics technology/technician	36	31	121	108	-	-	-
15.0611	Metallurgical technology/technician	-	1	51	4	-	-	-
15.0699	Industrial production technologies/technicians, other	82	163	400	580	18	-	-
15.07	Quality control and safety technologies	288	179	347	442	191	-	-
15.0701	Occupational safety and health technology/technician	99	54	143	401	119	-	-
15.0702	Quality control technology/technician	141	115	189	41	72	-	-
15.0799	Quality control and safety technologies/technicians	48	10	15	-	-	-	-
15.08	Mechanical engineering-related technologies	402	688	3,225	1,568	-	-	-
15.0801	Aeronautical and aerospace engineering technology/technician	16	225	380	223	-	-	-
15.0803	Automotive engineering technology/technician	52	195	813	236	-	-	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curricula of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
15 0905	Mechanical engineering/mechanical technology/technician	308	124	1,513	748	-	-	-
15 0999	Mechanical engineering-related technologies/technicians, other	26	144	519	361	-	-	-
15 09	Mining and petroleum technologies	95	4	72	10	-	-	-
15 0901	Mining technology/technician	72	2	21	1	-	-	-
15 0903	Petroleum technology/technician	23	2	51	8	-	-	-
15 0999	Mining and petroleum technologies/technicians, other	-	-	-	1	-	-	-
15 10	Construction/building technology	124	147	603	1,282	60	-	-
15 11	Miscellaneous engineering-related technologies	131	151	442	642	153	8	-
15 1101	Engineering-related technology/technician, general	60	30	194	448	145	-	-
15 1102	Surveying	69	77	223	194	8	8	-
15 1103	Hydraulic technology/technician	2	44	25	-	-	-	-
15 99	Engineering-related technologies/technicians, other	479	270	1,167	1,300	109	-	-
16	Foreign languages and literatures	573	122	517	20,739	2,902	847	-
16 01	Foreign languages and literatures	50	115	185	2,241	843	189	-
16 0101	Foreign languages and literatures, general	44	82	185	1,278	185	37	-
16 0102	Linguistics	-	1	-	954	520	152	-
16 0103	Foreign language interpretation and translation	6	32	-	9	138	-	-
16 03	East and Southeast Asian languages and literatures	28	-	16	849	92	37	-
16 0301	Chinese language and literature	12	-	7	243	16	12	-
16 0302	Japanese language and literature	16	-	9	480	34	8	-
16 0399	East and Southeast Asian languages and literatures, other	-	-	-	126	42	17	-
16 04	East European languages and literatures	1	-	4	445	90	43	-
16 0402	Russian language and literature	1	-	4	400	34	5	-
16 0403	Slavic languages and literature (other than Russian)	-	-	-	39	50	35	-
16 0499	East European languages and literatures, other	-	-	-	6	6	3	-
16 05	Germanic languages and literatures	18	-	13	1,636	223	71	-
16 0501	German language and literature	18	-	13	1,582	212	64	-
16 0502	Scandinavian languages and literature	-	-	-	39	4	6	-
16 0599	Germanic languages and literatures, other	-	-	-	15	7	1	-
16 07	South Asian languages and literatures	-	-	-	13	4	5	-
16 09	Romance languages and literatures	476	6	283	13,976	1,335	388	-
16 0901	French language and literature	9	1	39	3,345	356	89	-
16 0902	Italian language and literature	-	-	-	355	46	15	-
16 0904	Portuguese language and literature	-	-	-	40	10	2	-
16 0905	Spanish language and literature	467	5	244	10,051	815	197	-
16 0999	Romance languages and literature, other	-	-	-	185	108	85	-
16 11	Middle Eastern languages and literatures	-	-	-	73	47	17	-
16 1101	Arabic language and literature	-	-	-	22	2	2	-
16 1102	Hebrew language and literature	-	-	-	26	12	5	-
16 1199	Middle Eastern languages and literatures, other	-	-	-	25	33	10	-
16 12	Classical and Ancient Near Eastern languages and literature	-	-	-	1,260	195	56	-
16 1201	Classics and classical languages and literatures	-	-	-	1,048	166	55	-
16 1202	Greek language and literature (ancient and medieval)	-	-	-	53	8	1	-
16 1203	Latin language and literature (ancient and medieval)	-	-	-	145	8	-	-
16 1299	Classical and Ancient Near Eastern languages and literatures, other	-	-	-	14	13	-	-
16 99	Foreign languages and literatures, other	-	1	16	241	73	41	-
19	Home economics	1,401	327	1,156	17,970	2,613	356	-
19 01	Home economics, general	10	7	161	2,874	345	62	-
19 02	Home economics business services	-	-	-	47	-	-	-
19 0201	Business home economics	-	-	-	37	-	-	-
19 0202	Home economics communications	-	-	-	10	-	-	-
19 03	Family and community studies	8	4	65	499	88	1	-
19 04	Family/consumer resource management	-	-	-	1,616	73	14	-
19 0401	Family resource management studies	-	-	-	737	35	7	-
19 0402	Consumer economics and science	-	-	-	624	34	-	-
19 0499	Family/consumer resource management, other	-	-	-	255	4	7	-
19 05	Foods and nutrition studies	241	17	81	3,448	626	57	-
19 0501	Foods and nutrition studies, general	26	15	16	2,011	375	38	-
19 0502	Foods and nutrition science	177	-	2	177	52	10	-
19 0503	Dietetics/human nutritional services	29	2	63	1,228	182	9	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curricula of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
19.0505	Food systems administration	9	-	-	15	3	-	-
19.0599	Foods and nutrition studies, other	-	-	-	15	14	-	-
19.06	Housing studies	101	-	-	400	10	8	-
19.0601	Housing studies, general	-	-	-	345	10	6	-
19.0603	Interior environments	101	-	-	43	-	2	-
19.0699	Housing studies, other	-	-	-	12	-	-	-
19.07	Individual and family development studies	1,018	297	749	6,983	1,383	190	-
19.0701	Individual and family development studies, general	356	4	158	4,840	400	73	-
19.0703	Family and marriage counseling	-	-	-	-	751	36	-
19.0704	Family life and relations studies	141	1	-	800	92	11	-
19.0705	Gerontological services	192	76	39	44	61	-	-
19.0706	Child growth, care and development studies	203	216	548	732	65	68	-
19.0799	Individual and family development studies, other	126	-	4	567	14	2	-
19.09	Clothing/apparel and textile studies	10	-	83	1,898	75	16	-
19.99	Home economics, other	13	2	17	207	13	8	-
20.	Vocational home economics	10,627	6,462	8,360	490	8	-	-
20.02	Childcare and guidance workers and managers	7,425	5,205	6,754	122	1	-	-
20.0201	Childcare and guidance workers and managers, general	2,473	3,283	4,419	82	1	-	-
20.0202	Childcare provider/assistant	3,072	1,487	1,237	8	-	-	-
20.0203	Childcare services manager	1,713	384	1,034	32	-	-	-
20.0299	Childcare and guidance workers and managers, other	167	51	64	-	-	-	-
20.03	Clothing, apparel, and textiles workers and managers	281	317	207	20	2	-	-
20.0301	Clothing, apparel, and textiles workers and managers, general	60	23	26	20	2	-	-
20.0303	Commercial garment and apparel workers	132	164	85	-	-	-	-
20.0305	Custom tailor	7	98	14	-	-	-	-
20.0306	Fashion and fabric consultant	26	30	24	-	-	-	-
20.0309	Drycleaner and launderer (commercial)	-	-	-	-	-	-	-
20.0399	Clothing, apparel, and textile workers and managers, other	56	2	58	-	-	-	-
20.04	Institutional food workers and administrators	1,639	667	1,124	322	5	-	-
20.0401	Institutional food workers and administrators, general	1,156	386	650	24	5	-	-
20.0404	Dietitian assistant	183	51	210	-	-	-	-
20.0405	Food caterer	71	7	-	-	-	-	-
20.0409	Institutional food services administrator	226	207	229	298	-	-	-
20.0499	Institutional food workers and administrators, other	3	16	35	-	-	-	-
20.05	Home furnishings and equipment installers and consultants	78	155	211	12	-	-	-
20.0501	Home furnishings and equipment installers and consultants, general	77	124	187	-	-	-	-
20.0502	Window treatment maker and installer	-	9	-	-	-	-	-
20.0599	Home furnishings and equipment installers and consultants, other	1	22	24	12	-	-	-
20.06	Custodial, housekeeping, and home services workers and managers	1,194	98	27	-	-	-	-
20.0601	Custodial, housekeeping, and home services workers and managers, general	174	19	-	-	-	-	-
20.0602	Elder care provider/companion	24	17	25	-	-	-	-
20.0604	Custodian/caretaker	864	62	-	-	-	-	-
20.0605	Executive housekeeper	884	62	-	-	-	-	-
20.0699	Custodial, housekeeping, and home services workers and managers, other	82	-	-	-	-	-	-
20.99	Vocational home economics, other	10	20	37	14	-	-	-
22.	Law and legal studies	1,224	1,843	6,849	2,090	4,059	79	39,484
22.01	Law and legal studies	1,224	1,843	6,849	2,090	4,059	79	39,484
22.0101	Law (LL.B., J.D.)	-	-	-	-	-	-	39,484
22.0102	Pre-law studies	-	-	122	179	-	-	-
22.0103	Paralegal/legal assistant	1,113	1,637	6,645	944	41	-	-
22.0104	Judicial science/legal specialization (LL.M., M.C.L., J.S.D./S.J.D.)	-	53	-	13	2,612	51	-
22.0199	Law and legal studies, other	111	153	82	954	1,406	28	-
23.	English language and literature/letters	2,413	611	864	56,413	7,284	1,447	-
23.01	English language and literature, general	2,212	570	554	40,629	4,463	1,034	-
23.03	Comparative literature	28	-	-	870	172	155	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
23 04	English composition	-	2	7	469	34	7	-
23 05	English creative writing	10	1	11	1,453	1,563	12	-
23 07	American literature (United States)	-	-	26	46	4	12	-
23 08	English literature (British and Commonwealth)	-	-	-	1,173	190	52	-
23 10	Speech and rhetorical studies	19	-	223	10,003	541	118	-
23 11	English technical and business writing	27	10	6	395	222	2	-
23 99	English language and literature/letters, other	117	28	37	1,375	95	55	-
24	Liberal arts and sciences, general studies and humanities	279	4,715	207,843	42,232	2,757	113	-
24 01	Liberal arts and sciences/liberal studies	279	4,715	207,843	42,232	2,757	113	-
24 0101	Liberal arts and sciences/liberal studies	168	3,659	163,532	26,655	1,544	12	-
24 0102	General studies	21	959	27,833	8,246	150	11	-
24 0103	Humanities/humanistic studies	1	58	6,126	3,284	717	76	-
24 0199	Liberal art and sciences, general studies and humanities, other	89	39	10,352	4,047	346	14	-
25	Library science	150	49	96	78	5,149	45	-
25 01	Library science/librarianship	11	7	5	60	4,900	40	-
25 03	Library assistant	139	42	91	-	-	-	-
25 99	Library science, other	-	-	-	18	249	5	-
26	Biological sciences/life sciences	82	29	1,577	63,641	6,253	4,543	-
26 01	Biology, general	4	12	1,275	44,237	2,440	700	-
26 02	Biochemistry and biophysics	-	1	-	3,759	259	551	-
26 0202	Biochemistry	-	1	-	3,693	222	475	-
26 0203	Biophysics	-	-	-	66	37	76	-
26 03	Botany	-	-	-	340	198	172	-
26 0301	Botany, general	-	-	-	294	120	90	-
26 0305	Plant pathology	-	-	-	5	63	52	-
26 0307	Plant physiology	-	-	-	-	7	15	-
26 0399	Botany, other	-	-	-	41	8	15	-
26 04	Cell and molecular biology	-	-	-	2,674	292	605	-
26 0401	Cell biology	-	-	-	324	42	167	-
26 0402	Molecular biology	-	-	-	741	136	229	-
26 0499	Cell and molecular biology, other	-	-	-	1,609	114	209	-
26 05	Microbiology/bacteriology	31	-	6	2,767	269	378	-
26 06	Miscellaneous biological specializations	2	9	118	4,416	1,716	1,222	-
26 0601	Anatomy	-	-	-	108	118	63	-
26 0603	Ecology	-	-	4	957	193	112	-
26 0607	Marine/aquatic biology	-	-	9	873	122	57	-
26 0608	Neuroscience	-	-	-	951	74	282	-
26 0609	Nutritional sciences	-	-	1	424	398	100	-
26 0610	Parasitology	-	-	-	-	1	3	-
26 0611	Radiation biology/radiobiology	-	2	55	2	26	7	-
26 0612	Toxicology	-	1	3	40	67	88	-
26 0613	Genetics, plant and animal	-	-	-	355	116	247	-
26 0614	Biometrics	-	-	-	22	77	21	-
26 0615	Biostatistics	-	-	-	-	84	21	-
26 0616	Biotechnology research	2	1	27	143	254	2	-
26 0617	Evolutionary biology	-	-	-	17	8	21	-
26 0618	Biological immunology	-	-	-	-	10	33	-
26 0619	Virology	-	-	-	-	3	10	-
26 0699	Miscellaneous biological specializations, other	-	5	19	524	165	155	-
26 07	Zoology	45	7	31	3,167	731	718	-
26 0701	Zoology, general	-	-	4	2,494	174	143	-
26 0702	Entomology	45	7	-	105	154	114	-
26 0704	Pathology, human and animal	-	-	-	7	59	94	-
26 0705	Pharmacology, human and animal	-	-	-	45	97	215	-
26 0706	Physiology, human and animal	-	-	27	516	247	152	-
26 0799	Zoology, other	-	-	-	-	-	-	-
26 99	Biological sciences/life sciences, other	-	-	147	2,281	348	197	-
27	Mathematics	39	5	686	13,812	3,499	960	-
27 01	Mathematics	-	4	683	11,770	1,935	619	-
27 03	Applied mathematics	-	-	1	1,312	476	148	-
27 0301	Applied mathematics, general	-	-	1	808	327	113	-
27 0302	Operations research	-	-	-	465	141	35	-
27 0303	Applied mathematics, other	-	-	-	39	8	-	-
27 05	Mathematical statistics	1	1	1	454	922	179	-
27 99	Mathematics, other	38	-	1	276	166	14	-
29	Military technologies	-	-	62	3	-	-	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curricula of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
30	Multi/interdisciplinary studies	495	202	13,212	28,532	3,215	196	-
30.01	Biological and physical sciences	5	-	6,836	2,305	307	17	-
30.05	Peace and conflict studies	-	1	-	186	191	3	-
30.06	Systems science and theory	-	-	-	95	94	23	-
30.08	Mathematics and computer science	-	-	2	422	50	5	-
30.10	Biopsychology	-	-	-	109	1	-	-
30.11	Gerontology	92	37	41	190	163	5	-
30.12	Historic preservation, conservation, and architectural history	4	4	1	87	72	3	-
30.13	Medieval and renaissance studies	4	-	-	39	14	5	-
30.14	Museology/museum studies	2	-	2	21	146	-	-
30.15	Science, technology and society	13	-	37	344	85	7	-
30.99	Multi/interdisciplinary studies, other	375	160	6,293	24,734	2,092	328	-
31	Parks, recreation, leisure, and fitness studies	256	450	841	20,994	2,775	151	-
31.01	Parks, recreation, and leisure studies	78	4	85	2,482	218	17	-
31.03	Parks, recreation, and leisure facilities management	6	80	171	2,807	229	15	-
31.05	Health and physical education/fitness	150	57	490	15,572	2,305	109	-
31.0501	Health and physical education, general	111	16	202	6,161	740	37	-
31.0502	Adapted physical education/therapeutic recreation	-	2	-	193	25	-	-
31.0503	Athletic training and sports medicine	-	10	66	1,570	150	-	-
31.0504	Sport and fitness administration/management	11	8	134	2,475	581	10	-
31.0505	Exercise sciences/physiology and movement studies	5	3	35	4,571	718	51	-
31.0506	Socio-psychological sports studies	-	-	-	19	5	-	-
31.0599	Health and physical education/fitness, other	23	18	53	583	86	11	-
31.99	Parks, recreation, leisure, and fitness studies, other	22	309	95	133	23	10	-
38	Philosophy and religion	12	30	139	11,339	1,373	611	-
38.01	Philosophy	1	-	85	6,591	629	313	-
38.02	Religion/religious studies	11	30	45	4,280	583	279	-
38.99	Philosophy and religion	-	-	9	468	161	19	-
39	Theological studies and religious vocations	161	1,058	620	9,412	5,686	1,861	6,048
39.01	Biblical and other theological languages and literatures	-	-	-	24	199	5	-
39.02	Bible/biblical studies	29	745	333	3,349	429	27	-
39.03	Missions/missionary studies and missiology	-	1	6	382	338	69	-
39.04	Religious education	8	43	100	1,094	526	271	-
39.05	Religious/sacred music	6	9	11	172	108	2	-
39.06	Theological and ministerial studies	91	213	144	3,326	3,052	1,129	6,048
39.0601	Theology/theological studies	3	90	114	1,538	2,325	852	-
39.0602	Divinity/ministry (B.D., M.Div.)	-	-	-	-	-	-	5,784
39.0603	Rabbinical and Talmudic studies (M.H.L./Rav)	-	-	-	-	-	-	181
39.0604	Pre-theological/Pre-ministerial studies	4	16	6	271	3	-	-
39.0605	Ordination, other	-	-	-	-	-	-	83
39.0606	Talmudic studies	-	7	-	841	251	14	-
39.0699	Theological and ministerial studies, other	84	100	24	676	473	263	-
39.07	Pastoral counseling and specialized ministries	13	25	6	502	738	220	-
39.99	Theological studies and religious vocations, other	14	22	20	563	296	138	-
40	Physical sciences	483	6	1,403	19,197	5,045	3,810	-
40.01	Physical sciences, general	1	2	850	326	37	3	-
40.02	Astronomy	-	-	2	186	84	61	-
40.03	Astrophysics	-	-	-	141	28	9	-
40.04	Atmospheric sciences and meteorology	-	-	-	538	141	68	-
40.05	Chemistry	-	-	202	10,044	1,869	2,037	-
40.0501	Chemistry, general	-	-	198	9,707	1,773	1,893	-
40.0502	Analytical chemistry	-	-	-	-	17	7	-
40.0503	Inorganic chemistry	-	-	-	-	1	2	-
40.0504	Organic chemistry	-	-	-	8	11	9	-
40.0505	Medicinal/pharmaceutical chemistry	-	-	-	54	22	43	-
40.0506	Physical and theoretical chemistry	-	-	-	5	6	20	-
40.0507	Polymer chemistry	-	-	-	-	11	25	-
40.0599	Chemistry, other	-	-	4	270	28	38	-
40.06	Geological and related sciences	184	-	28	2,820	1,003	351	-
40.0601	Geology	-	-	28	2,529	846	245	-
40.0602	Geochemistry	-	-	-	4	5	3	-
40.0603	Geophysics and seismology	-	-	-	69	62	68	-
40.0604	Paleontology	-	-	-	-	1	-	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curricula of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
40 0699	Geological and related sciences, other	184	-	-	218	89	35	-
40 07	Miscellaneous physical sciences	281	-	51	824	366	155	-
40 0701	Metallurgy	-	-	-	-	11	1	-
40 0702	Oceanography	281	-	30	235	114	90	-
40 0703	Earth and planetary science	-	-	-	539	148	53	-
40 0799	Miscellaneous physical sciences, other	-	-	21	50	93	11	-
40 08	Physics	1	4	178	4,024	1,354	1,096	-
40 0801	Physics, general	1	4	126	3,892	1,246	1,014	-
40 0802	Chemical and atomic/molecular physics	-	-	-	25	8	5	-
40 0806	Nuclear physics	-	-	-	-	1	3	-
40 0807	Optics	-	-	52	11	32	19	-
40 0810	Theoretical and mathematical physics	-	-	-	10	-	1	-
40 0899	Physics, other	-	-	-	86	67	54	-
40 99	Physical sciences, other	16	-	92	294	163	30	-
41	Science technologies	146	146	1,053	268	25	3	-
41 01	Biological technology	43	29	126	41	-	3	-
41 02	Nuclear and industrial radiologic technologies	30	20	69	-	2	-	-
41 0204	Industrial radiologic technology/technician	-	20	14	-	-	-	-
41 0205	Nuclear/nuclear power technology/technician	30	-	52	-	2	-	-
41 0299	Nuclear and industrial radiologic technologies/technicians, other	-	-	3	-	-	-	-
41 03	Physical science technologies	66	54	592	32	-	-	-
41 0301	Chemical technology/technician	66	54	589	26	-	-	-
41 0399	Physical science technologies/technicians, other	-	-	3	6	-	-	-
41 99	Science technologies, other	7	43	266	195	23	-	-
42	Psychology	169	34	1,719	81,302	15,217	4,401	-
42 01	Psychology	148	3	1,518	75,356	4,338	1,417	-
42 02	Clinical psychology	-	-	-	124	1,646	1,938	-
42 03	Cognitive psychology and psycholinguistics	-	-	-	116	42	18	-
42 04	Community psychology	1	-	21	95	301	5	-
42 06	Counseling psychology	-	1	1	393	5,287	349	-
42 07	Developmental and child psychology	-	-	-	1,025	150	73	-
42 08	Experimental psychology	-	-	-	321	50	56	-
42 09	Industrial and organizational psychology	-	7	-	214	1,236	73	-
42 11	Physiological psychology/psychobiology	-	-	-	253	7	29	-
42 16	Social psychology	-	6	22	778	190	43	-
42 17	School psychology	-	14	1	-	8/2	215	-
42 99	Psychology, other	20	3	156	2,627	1,098	185	-
43	Protective services	17,472	4,489	17,721	27,043	2,992	49	-
43 01	Criminal justice and corrections	13,451	3,701	14,635	26,705	2,948	48	-
43 0102	Corrections/correctional administration	2,654	232	675	635	16	-	-
43 0103	Criminal justice/law enforcement administration	1,204	452	3,336	7,750	1,393	3	-
43 0104	Criminal justice studies	95	209	3,108	15,899	1,250	39	-
43 0106	Forensic technology/technician	181	-	70	153	186	-	-
43 0107	Law enforcement/police science	6,923	2,640	7,012	1,354	73	-	-
43 0109	Security and loss prevention services	1,617	115	75	41	-	-	-
43 0199	Criminal justice and corrections, other	797	53	359	873	30	6	-
43 02	Fire protection	3,688	648	2,619	328	35	1	-
43 0201	Fire protection and safety technology/technician	1,195	272	1,735	122	6	-	-
43 0202	Fire services administration	38	28	151	162	2	-	-
43 0203	Fire science/firefighting	2,388	347	718	23	-	-	-
43 0299	Fire protection, other	67	1	15	21	27	1	-
43 99	Protective services, other	333	140	467	10	9	-	-
44	Public administration and services	609	387	3,330	20,175	25,626	571	-
44 02	Community organization, resources, and services	51	93	1,055	2,126	650	7	-
44 04	Public administration	8	26	30	2,411	7,478	189	-
44 05	Public policy analysis	-	-	7	774	992	119	-
44 07	Social work	120	67	1,509	14,305	15,758	248	-
44 99	Public administration and services, other	430	201	729	559	748	8	-
45	Social sciences and history	333	48	5,627	146,067	14,151	3,911	-
45 01	Social sciences, general	-	6	4,241	8,258	562	63	-
45 02	Anthropology	4	-	78	7,579	990	492	-
45 03	Archeology	38	5	5	173	27	16	-
45 04	Criminology	89	-	37	3,497	235	15	-
45 05	Demography/population studies	-	-	-	1	26	13	-
45 06	Economics	-	1	217	23,274	2,339	826	-
45 0601	Economics, general	-	1	198	22,493	1,939	802	-
45 0602	Applied and resource economics	-	-	-	168	152	5	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curricula of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
45 0603	Econometrics and quantitative economics	-	-	-	64	-	-	-
45 0604	Development economics and international development	-	-	-	-	96	5	-
45 0605	International economics	-	-	-	106	124	6	-
45 0699	Economics, other	-	-	19	443	28	8	-
45 07	Geography	106	16	65	4,259	759	205	-
45 0701	Geography	59	9	35	4,180	743	205	-
45 0702	Cartography	47	7	30	79	16	-	-
45 08	History	42	1	290	28,467	2,426	930	-
45 0801	History, general	-	1	288	28,057	2,311	895	-
45 0802	American (United States) history	42	-	-	51	19	8	-
45 0803	European history	-	-	-	20	5	-	-
45 0804	History and philosophy of science and technology	-	-	-	112	35	21	-
45 0805	Public/applied history and archival administration ..	-	-	-	22	30	-	-
45 0899	History, other	-	-	2	205	26	6	-
45 09	International relations and affairs	30	1	9	6,283	2,366	51	-
45 10	Political science and government	23	7	151	32,635	1,643	625	-
45 1001	Political science, general	23	2	147	31,904	1,550	620	-
45 1002	American government and politics	-	-	-	66	77	-	-
45 1099	Political science and government, other	-	5	4	665	16	5	-
45 11	Sociology	-	6	417	27,685	1,931	537	-
45 12	Urban affairs/studies	-	-	6	724	240	37	-
45 99	Social sciences and history, other	1	5	111	3,232	607	101	-
46	Construction trades	6,551	9,990	2,653	203	9	-	-
46 01	Masons and tile setter	446	296	36	-	-	-	-
46 02	Carpenters	1,243	1,763	430	-	-	-	-
46 03	Electrical and power transmission installation	2,167	5,032	1,245	-	-	-	-
46 0301	Electrical and power transmission installation, general	85	207	93	-	-	-	-
46 0302	Electrician	2,043	4,431	1,050	-	-	-	-
46 0303	Lineworker	36	349	86	-	-	-	-
46 0399	Electrical and power transmission installation, other	3	45	16	-	-	-	-
46 04	Construction and building finishers and managers	1,320	1,108	422	170	9	-	-
46 0401	Building/property maintenance and manager	906	838	107	52	-	-	-
46 0403	Construction/building inspector	74	82	72	4	-	-	-
46 0406	Painter and wall coverer	57	6	1	-	-	-	-
46 0499	Construction and building finishers and managers, other	283	182	242	114	9	-	-
46 05	Plumbers and pipefitters	760	703	160	-	-	-	-
46 99	Construction trades, other	615	1,088	360	33	-	-	-
47	Mechanics and repairers	14,549	34,318	12,316	192	-	-	-
47 01	Electrical and electronics equipment installers and repairers	3,825	5,323	2,674	15	-	-	-
47 0101	Electrical and electronics equipment installer and repairer, general	904	1,982	910	-	-	-	-
47 0102	Business machine repairer	101	67	7	-	-	-	-
47 0103	Communications systems installer and repairer	333	530	423	-	-	-	-
47 0104	Computer installer and repairer	1,698	1,287	558	14	-	-	-
47 0105	Industrial electronics installer and repairer	548	789	635	-	-	-	-
47 0106	Major appliance installer and repairer	64	183	4	-	-	-	-
47 0199	Electrical and electronics equipment installer and repairer, other	177	485	137	-	-	-	-
47 02	Heating, air-conditioning, and refrigeration mechanics and repairers	2,637	5,450	1,042	-	-	-	-
47 03	Industrial equipment maintenance and repairers	1,696	1,285	589	-	-	-	-
47 0302	Heavy equipment maintenance and repairer	44	163	135	-	-	-	-
47 0303	Industrial machinery maintenance and repairer	674	957	408	-	-	-	-
47 0399	Industrial equipment maintenance and repairers, other	978	165	46	-	-	-	-
47 04	Miscellaneous mechanics and repairers	232	630	198	-	-	-	-
47 0401	Instrument calibration and repairer	31	2	60	-	-	-	-
47 0402	Gunsmith	26	38	84	-	-	-	-
47 0403	Locksmith and safe repairer	-	36	-	-	-	-	-
47 0404	Musical instrument repairer	69	78	7	-	-	-	-
47 0408	Watch, clock, and jewelry repairer	45	90	46	-	-	-	-
47 0499	Miscellaneous mechanics and repairers, other	61	386	1	-	-	-	-
47 05	Stationary energy sources installers and operators	27	35	1	-	-	-	-
47 06	Vehicle and mobile equipment mechanics and repairers	5,777	20,700	7,522	177	-	-	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
47 0603	Auto/automotive body repairer	615	2,424	600	3	-	-	-
47 0604	Auto/automotive mechanic/technician	3,751	10,606	4,438	11	-	-	-
47 0605	Diesel engine mechanics and repairer	592	2,008	1,212	30	-	-	-
47 0606	Small-engine mechanic and repairer	212	244	8	-	-	-	-
47 0607	Aircraft mechanic/technician, airframe	209	2,039	389	29	-	-	-
47 0608	Aircraft mechanic/technician, powerplant	86	1,177	247	-	-	-	-
47 0609	Aviation systems and avionics maintenance technologist/technician	49	494	427	104	-	-	-
47 0611	Motorcycle mechanic and repairer	197	1,451	-	-	-	-	-
47 0699	Vehicle and mobile equipment mechanics and repairers, other	66	257	201	-	-	-	-
47 99	Mechanics and repairers, other	355	895	290	-	-	-	-
48	Precision production trades	8,327	12,943	10,960	551	2	-	-
48 01	Drafting	1,843	4,195	7,347	305	-	-	-
48 0101	Drafting, general	1,367	2,631	4,795	94	-	-	-
48 0102	Architectural drafting	96	652	1,020	-	-	-	-
48 0103	Civil/structural drafting	6	43	35	-	-	-	-
48 0104	Electrical/electronics drafting	51	41	100	4	-	-	-
48 0105	Mechanical drafting	241	555	793	180	-	-	-
48 0199	Drafting, other	82	273	604	27	-	-	-
48 02	Graphic and printing equipment operators	545	1,386	1,348	197	-	-	-
48 0201	Graphic and printing equipment operators, general	192	587	789	158	-	-	-
48 0205	Mechanical typesetter and composer	5	-	18	-	-	-	-
48 0206	Lithographer and platemaker	30	7	61	-	-	-	-
48 0208	Printing press operator	10	53	29	10	-	-	-
48 0211	Computer typography and composition equipment operator	103	150	175	-	-	-	-
48 0212	Desktop-publishing equipment operator	166	289	108	-	-	-	-
48 0299	Graphic and printing equipment operators, other	39	300	188	29	-	-	-
48 03	Leatherworkers and upholsterers	123	112	5	-	-	-	-
48 0303	Upholster	111	112	3	-	-	-	-
48 0304	Shoe, boot, and leather repairer	12	-	-	-	-	-	-
48 0399	Leatherworkers and upholsterers, other	-	-	2	-	-	-	-
48 05	Precision metal workers	5,408	6,728	2,008	15	-	-	-
48 0501	Machinist/machine technologist	865	906	554	-	-	-	-
48 0503	Machine shop assistant	695	1,371	443	-	-	-	-
48 0506	Sheet metal workers	41	156	83	-	-	-	-
48 0507	Tool and die maker/technologist	119	519	403	12	-	-	-
48 0508	Welder/welding technologist	3,487	3,706	496	1	-	-	-
48 0599	Precision metal workers, other	201	70	29	2	-	-	-
48 07	Woodworkers	227	375	129	34	2	-	-
48 0701	Woodworkers, general	24	58	11	-	-	-	-
48 0702	Furniture designer and maker	18	26	17	34	2	-	-
48 0703	Cabinet maker and millworker	173	254	100	-	-	-	-
48 0799	Woodworkers, other	12	37	1	-	-	-	-
48 99	Precision production trades, other	181	147	123	-	-	-	-
49	Transportation and materials-moving workers	23,089	1,559	1,159	4,073	709	-	-
49 01	Air transportation workers	2,494	137	1,042	3,829	705	-	-
49 0101	Aviation and airway science	1	6	338	2,163	4	-	-
49 0102	Aircraft pilot and navigator (professional)	1,085	104	506	856	625	-	-
49 0104	Aviation management	-	-	98	721	34	-	-
49 0105	Air traffic control	100	-	70	63	-	-	-
49 0106	Flight attendant	486	9	17	-	-	-	-
49 0107	Aircraft pilot (private)	33	-	3	5	-	-	-
49 0199	Air transportation workers, other	789	18	10	21	42	-	-
49 02	Vehicle and equipment operators	17,364	507	9	-	-	-	-
49 0202	Construction equipment operator	55	157	-	-	-	-	-
49 0205	Truck, bus, and other commercial vehicle operators	16,123	308	3	-	-	-	-
49 0299	Vehicle and equipment operators, other	1,186	42	6	-	-	-	-
49 03	Water transportation workers	2,842	824	69	227	-	-	-
49 0303	Fishing technology/commercial fishing	31	-	-	-	-	-	-
49 0304	Diver (professional)	169	606	32	-	-	-	-
49 0306	Marine maintenance and ship repairer	53	208	37	-	-	-	-
49 0309	Marine science/merchant marine officer	2,267	7	-	227	-	-	-
49 0399	Water transportation workers, other	322	3	-	-	-	-	-
49 99	Transportation and materials-moving workers, other	389	91	39	17	4	-	-
50	Visual and performing arts	4,146	6,203	21,035	69,781	11,627	1,115	-
50 01	Visual and performing arts	8	88	372	1,957	101	1	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
50 02	Crafts, folk art, and artisanry	164	7	-	145	1	-	-
50 03	Dance	1	21	95	1,477	235	8	-
50 04	Design and applied arts	1,609	3,424	14,917	12,410	1,017	3	-
50 0401	Design and visual communications	497	425	2,475	1,883	99	3	-
50 0402	Graphic design, commercial art, and illustration	862	2,366	7,630	6,239	580	-	-
50 0404	Industrial design	3	6	221	990	97	-	-
50 0406	Commercial photography	71	218	386	-	-	-	-
50 0407	Fashion design and illustration	62	44	1,577	851	30	-	-
50 0408	Interior design	80	275	1,583	1,738	111	-	-
50 0499	Design and applied arts, other	34	90	1,045	709	100	-	-
50 05	Dramatic/theater arts and stagecraft	89	551	552	8,973	1,391	88	-
50 0501	Drama/theater arts, general	3	117	335	8,338	1,104	88	-
50 0502	Technical theater/theater design and stagecraft	3	13	124	245	48	-	-
50 0503	Acting and directing	82	63	83	173	133	-	-
50 0504	Playwriting and screenwriting	-	-	3	70	78	-	-
50 0505	Drama/theater literature, history, and criticism	-	-	-	19	-	-	-
50 0599	Dramatic/theater arts and stagecraft, other	1	358	7	128	28	-	-
50 06	Film/video and photographic arts	225	640	1,656	5,483	866	18	-
50 0601	Film/cinema studies	25	-	1	1,276	120	7	-
50 0602	Film/video making/cinematography and production	32	79	1,006	1,991	535	11	-
50 0605	Photography	167	478	482	1,298	167	-	-
50 0699	Film/video and photographic arts, other	1	83	167	918	44	-	-
50 07	Fine arts and art studies	1,599	194	1,524	26,289	3,420	208	-
50 0701	Art, general	11	20	785	13,790	869	16	-
50 0702	Fine/studio arts	-	8	143	5,697	902	5	-
50 0703	Art history, criticism and conservation	-	-	6	2,797	558	187	-
50 0704	Arts management	-	4	3	302	186	-	-
50 0705	Drawing	1	6	40	248	22	-	-
50 0706	Intermedia	6	22	413	151	20	-	-
50 0708	Painting	1	27	-	705	197	-	-
50 0709	Sculpture	-	12	2	295	55	-	-
50 0710	Printmaking	3	3	-	148	38	-	-
50 0711	Ceramics arts and ceramics	-	3	13	203	57	-	-
50 0712	Fiber, textile, and weaving arts	-	1	7	117	34	-	-
50 0713	Metal and jewelry arts	1,571	87	9	86	33	-	-
50 0799	Fine arts and art studies, other	6	1	103	1,750	449	-	-
50 09	Music	320	894	1,589	12,279	4,108	763	-
50 0901	Music, general	5	328	484	6,353	1,400	349	-
50 0902	Music history and literature	-	-	-	109	60	14	-
50 0903	Music—general performance	-	389	145	3,682	1,899	243	-
50 0904	Music theory and composition	-	28	7	435	186	75	-
50 0905	Musiology and ethnomusicology	-	-	-	14	31	9	-
50 0906	Music conducting	-	-	-	3	71	20	-
50 0907	Music—piano and organ performance	-	4	6	76	100	12	-
50 0908	Music—voice and choral/opera performance	-	3	2	194	113	5	-
50 0909	Music business management and merchandising	16	1	43	535	6	-	-
50 0999	Music, other	299	141	902	878	242	36	-
50 99	Visual and performing arts, other	131	384	330	768	488	26	-
51	Health professions and related sciences	91,710	83,260	82,671	72,347	44,094	3,543	36,856
51 01	Chiropractic (D.C., D.C.M.)	-	-	-	-	-	-	3,284
51 02	Communication disorders sciences and services	127	277	662	5,731	5,672	509	-
51 0201	Communication disorders, general	-	-	16	1,707	1,350	35	-
51 0202	Audiology/hearing sciences	-	-	4	130	216	398	-
51 0203	Speech-language pathology	-	-	44	705	1,405	14	-
51 0204	Speech-language pathology and audiology	-	-	5	3,043	2,651	62	-
51 0205	Sign language interpreter	127	277	575	131	-	-	-
51 0299	Communication disorders sciences and services, other	-	-	18	15	50	-	-
51 03	Community health services	67	14	118	1,041	184	3	-
51 04	Dentistry (D.D.S., D.M.D.)	-	-	-	-	-	-	4,285
51 05	Dental clinical science/graduate dentistry (M.S., Ph.D.)	-	-	-	-	438	38	-
51 06	Dental services	5,590	5,380	5,400	1,130	32	-	-
51 0601	Dental assistant	5,252	4,766	639	2	-	-	-
51 0602	Dental hygienist	60	320	4,594	1,117	12	-	-
51 0603	Dental laboratory technician	217	268	153	6	10	-	-
51 0699	Dental services, other	61	26	14	5	10	-	-
51 07	Health and medical administrative services	9,500	5,338	2,717	3,582	3,927	76	-
51 0701	Health system/health services administration	263	169	102	1,973	2,693	52	-
51 0702	Hospital/health facilities administration	2	20	21	801	953	2	-
51 0703	Health unit coordinator/ward clerk	797	50	17	-	-	-	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
51.0704	Health unit coordinator/ward supervisor	4	1	4	29	-	-	-
51.0705	Medical office management	2,793	807	500	-	1	-	-
51.0706	Medical records administration	478	671	106	486	34	-	-
51.0707	Medical records technology/technician	1,107	1,613	1,492	-	3	-	-
51.0708	Medical transcription	1,314	1,076	137	-	-	-	-
51.0799	Health and medical administrative services, other	2,742	931	338	293	243	22	-
51.08	Health and medical assistants	28,288	20,608	11,521	2,367	2,154	-	-
51.0801	Medical assistant	22,894	16,714	4,760	1	-	-	-
51.0802	Medical laboratory assistant	698	43	28	21	19	-	-
51.0803	Occupational therapy assistant	-	58	1,355	25	-	-	-
51.0804	Ophthalmic medical assistant	49	13	8	-	-	-	-
51.0805	Pharmacy technician/assistant	2,576	2,044	387	-	-	-	-
51.0806	Physical therapy assistant	243	58	2,665	25	-	-	-
51.0807	Physician assistant	33	389	123	2,094	2,116	-	-
51.0808	Veterinarian assistant/animal health technician	499	165	2,027	193	-	-	-
51.0899	Health and medical assistants, other	1,296	1,124	168	8	19	-	-
51.09	Health and medical diagnostic and treatment services	12,976	11,654	11,939	1,995	62	8	-
51.0901	Cardiovascular technology/technician	329	553	255	41	-	-	-
51.0902	Electrocardiograph technology/technician	245	39	18	-	-	-	-
51.0903	Electroencephalograph technology/technician	-	8	14	1	-	-	-
51.0904	Emergency medical technology/technician	11,126	2,867	1,219	77	10	-	-
51.0905	Nuclear medical technology/technician	13	202	214	210	-	-	-
51.0906	Perfusion technology/technician	-	-	-	32	20	-	-
51.0907	Medical radiologic technology/technician	479	1,516	5,478	808	4	-	-
51.0908	Respiratory therapy technician	90	1,263	3,024	446	-	-	-
51.0909	Surgical/operating room technician	267	3,793	1,067	-	-	-	-
51.0910	Diagnostic medical sonography	96	1,200	557	196	-	-	-
51.0999	Health and medical diagnostic and treatment services, other	331	213	93	184	28	8	-
51.10	Health and medical laboratory technologies	2,139	857	1,500	1,783	515	102	-
51.1001	Blood bank technology/technician	340	35	-	-	-	-	-
51.1002	Cytotechnologist	3	64	1	92	-	-	-
51.1003	Hematology technology/technician	422	40	-	-	4	-	-
51.1004	Medical laboratory technician	368	464	1,385	53	-	-	-
51.1005	Medical technology	-	137	26	1,524	87	1	-
51.1006	Optometric/ophthalmic laboratory technician	56	-	12	-	-	-	-
51.1099	Health and medical laboratory technologies/technicians, other	950	117	76	114	424	101	-
51.11	Health and medical preparatory program	115	7	642	1,544	81	-	-
51.1101	Pre-dentistry studies	-	-	35	50	-	-	-
51.1102	Pre-medicine studies	2	7	193	719	-	-	-
51.1103	Pre-pharmacy studies	-	-	90	85	-	-	-
51.1104	Pre-veterinary studies	-	-	92	220	-	-	-
51.1199	Health and medical preparatory programs, other	113	-	232	470	81	-	-
51.12	Medicine (M.D.)	-	-	-	-	-	-	15,486
51.13	Medical basic sciences	7	22	18	446	575	553	-
51.1301	Medical anatomy	-	-	-	-	12	20	-
51.1302	Medical biochemistry	-	-	-	8	23	73	-
51.1304	Medical physics/biophysics	-	-	-	-	31	5	-
51.1305	Medical cell biology	-	-	-	13	3	16	-
51.1306	Medical genetics	-	-	-	-	41	23	-
51.1307	Medical immunology	-	-	-	-	22	42	-
51.1308	Medical microbiology	-	-	-	82	20	76	-
51.1309	Medical molecular biology	-	-	-	-	5	16	-
51.1310	Medical neurobiology	-	-	-	9	4	31	-
51.1311	Medical nutrition	-	-	-	3	28	-	-
51.1312	Medical pathology	-	-	-	-	34	41	-
51.1313	Medical physiology	-	-	-	-	32	45	-
51.1314	Medical toxicology	-	-	-	3	3	6	-
51.1399	Medical basic sciences, other	7	22	18	328	317	159	-
51.14	Medical clinical sciences (M.S., Ph.D.)	-	-	-	8	99	31	-
51.15	Mental health services	3,546	1,518	2,565	681	721	14	-
51.1501	Alcohol/drug abuse counseling	319	855	705	88	78	-	-
51.1502	Psychiatric/mental health services technician	217	525	1,337	109	36	-	-
51.1503	Clinical and medical social work	6	3	23	124	141	8	-
51.1599	Mental health services, other	3,004	135	500	360	466	6	-
51.16	Nursing	24,949	35,460	43,610	38,127	11,375	471	-
51.1601	Nursing (R.N. training)	541	3,696	41,783	32,209	4,101	217	-
51.1602	Nursing administration (post-R.N.)	-	4	19	256	447	4	-
51.1603	Nursing, adult health (post-R.N.)	-	-	-	93	245	-	-
51.1604	Nursing anesthetist (post-R.N.)	-	-	-	-	734	-	-
51.1605	Nursing, family practice (post-R.N.)	-	2	6	36	1,202	2	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curricula of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First profes- sional degrees
51 1606	Nursing, maternal/child health (post-R.N.)	-	-	5	-	165	-	-
51 1607	Nursing midwifery (post-R.N.)	-	8	-	-	95	-	-
51 1608	Nursing science (post-R.N.)	-	-	-	2,214	1,477	163	-
51 1609	Nursing, pediatric (post-R.N.)	-	-	-	-	79	-	-
51 1610	Nursing, psychiatric/mental health (post-R.N.)	-	-	-	-	104	-	-
51 1611	Nursing, public health (post-R.N.)	-	-	-	-	227	-	-
51 1612	Nursing, surgical (post-R.N.)	17	-	-	-	87	-	-
51 1613	Practical nurse (L.P.N. training)	1,666	29,041	936	-	-	-	-
51 1614	Nurse assistant/aide	20,353	1,460	-	-	-	-	-
51 1615	Home health aide	863	11	19	-	-	-	-
51 1699	Nursing, other	1,509	1,238	812	3,319	2,412	85	-
51 17	Optometry (O.D.)	-	-	-	-	-	-	1,319
51 18	Ophthalmic/optometric services	239	82	328	30	56	2	-
51 1801	Optician/dispensing optician	157	21	207	-	-	-	-
51 1802	Optical technician/assistant	82	52	89	-	-	-	-
51 1803	Ophthalmic medical technologist	-	9	30	6	5	-	-
51 1899	Ophthalmic/optometric services, other	-	-	2	24	51	2	-
51 19	Osteopathic medicine (D.O.)	-	-	-	-	-	-	2,416
51 20	Pharmacy	105	57	53	1,834	361	244	7,076
51 2001	Pharmacy (B.Pharm., Pharm.D.)	-	-	-	1,511	-	-	7,076
51 2002	Pharmacy administration and pharmaceuticals	-	-	12	-	49	22	-
51 2003	Medical pharmacology and pharmaceutical science	-	-	-	238	242	187	-
51 2099	Pharmacy, other	105	57	41	85	70	35	-
51 21	Podiatry (D.P.M., D.P., Pod.D.)	-	-	-	-	-	-	474
51 22	Public health	66	34	85	1,379	5,231	411	-
51 2201	Public health, general	43	17	19	399	3,071	83	-
51 2202	Environmental health	-	-	45	224	292	46	-
51 2203	Epidemiology	-	-	-	-	555	128	-
51 2204	Health and medical biostatistics	-	-	-	10	99	25	-
51 2205	Health physics/radiologic health	-	-	-	16	18	-	-
51 2206	Occupational health and industrial hygiene	22	17	11	62	81	7	-
51 2207	Public health education and promotion	-	-	-	362	419	42	-
51 2299	Public health, other	1	-	10	306	696	80	-
51 23	Rehabilitation/therapeutic services	432	440	750	6,245	9,220	787	-
51 2301	Art therapy	-	-	-	89	228	-	-
51 2302	Dance therapy	-	-	-	4	24	-	-
51 2303	Hypnotherapy	-	127	-	-	-	-	-
51 2304	Movement therapy	-	-	-	-	12	-	-
51 2305	Music therapy	-	8	-	236	58	-	-
51 2306	Occupational therapy	-	1	141	3,101	2,046	26	-
51 2307	Orthotics/prosthetics	-	30	45	22	-	-	-
51 2308	Physical therapy	-	-	205	1,542	5,782	733	-
51 2309	Recreational therapy	66	1	34	245	7	-	-
51 2310	Vocational rehabilitation counseling	3	5	14	126	590	5	-
51 2399	Rehabilitation/therapeutic services, other	363	268	311	880	473	23	-
51 24	Veterinary medicine (D.V.M.)	-	-	-	-	-	-	2,289
51 25	Veterinary clinical sciences (M.S., Ph.D.)	-	-	-	4	157	116	-
51 26	Miscellaneous health aides	1,237	45	59	-	-	-	-
51 27	Miscellaneous health professions	-	64	2	117	2,265	22	227
51 2701	Acupuncture and oriental medicine	-	17	-	47	2,199	-	-
51 2702	Medical dietitian	-	-	2	35	26	1	-
51 2703	Medical illustrating	-	-	-	35	36	1	-
51 2704	Naturopathic medicine	-	47	-	-	-	20	227
51 2705	Psychoanalysis	-	-	-	-	4	-	-
51 99	Health professions and related sciences, other	2,327	1,403	702	4,303	969	156	-
52	Business management and administrative services	47,541	41,183	95,482	295,469	125,012	1,162	-
52 01	Business	3,805	1,705	13,009	28,376	10,310	177	-
52 02	Business administration and management	4,144	3,260	31,047	109,994	76,454	588	-
52 0201	Business administration and management, general	2,618	2,192	27,597	100,025	70,314	555	-
52 0202	Purchasing, procurement, and contracts management	79	2	57	367	359	-	-
52 0203	Logistics and materials management	133	31	65	1,272	162	-	-
52 0204	Office supervision and management	516	650	1,011	840	62	-	-
52 0205	Operations management and supervision	253	231	689	2,344	1,895	6	-
52 0206	Non-profit and public management	-	5	9	118	159	-	-
52 0299	Business administration and management, other	545	149	1,619	5,028	3,503	27	-
52 03	Accounting	5,072	5,676	12,581	34,719	6,087	36	-
52 0301	Accounting	2,285	1,739	6,416	34,344	5,895	36	-
52 0302	Accounting technician	2,245	3,303	6,036	64	3	-	-
52 0399	Accounting, other	542	634	129	311	189	-	-

- Data not available

Table VI-1. Earned awards and degrees, by field of study, 2001-02—Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, certificates of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees	Doctoral degrees	First professional degrees
52.04	Administrative and secretarial services	16,507	20,346	15,142	941	46	-	-
52.0401	Administrative assistant/secretarial science, general	5,677	7,155	8,575	485	-	-	-
52.0402	Executive assistant/secretary	702	1,151	1,961	51	-	-	-
52.0403	Legal administrative assistant/secretary	456	819	787	1	-	-	-
52.0404	Medical administrative assistant/secretary	3,582	4,544	2,098	1	-	-	-
52.0405	Court reporter	20	327	236	32	-	-	-
52.0406	Receptionist	415	118	7	-	-	-	-
52.0407	Information-processing/data-entry technician	2,676	1,276	878	164	-	-	-
52.0408	General office/clerical and typing services	3,094	3,717	274	82	-	-	-
52.0499	Administrative and secretarial services, other	1,885	1,239	326	125	46	-	-
52.05	Business communications	21	4	16	283	103	3	-
52.06	Business/managerial economics	9	2	13	3,802	237	41	-
52.07	Enterprise management and operation	663	218	229	967	671	-	-
52.0701	Enterprise management and operation, general	618	211	203	934	650	-	-
52.0799	Enterprise management operation, other	65	7	26	33	21	-	-
52.08	Financial management and services	1,062	762	650	30,638	6,919	65	-
52.0801	Finance, general	35	16	254	28,043	5,654	57	-
52.0802	Actuarial science	-	-	1	259	53	-	-
52.0803	Banking and financial support services	924	699	349	657	291	4	-
52.0804	Financial planning	8	-	-	89	191	-	-
52.0805	Insurance and risk management	74	41	3	598	56	4	-
52.0806	International finance	-	-	-	2	140	-	-
52.0807	Investments and securities	-	-	-	572	381	-	-
52.0899	Financial management and services, other	21	6	43	418	153	-	-
52.09	Hospitality services management	1,433	557	2,741	6,072	496	18	-
52.0901	Hospitality/administration management	77	45	272	1,823	216	2	-
52.0902	Hotel/motel and restaurant management	346	206	1,628	3,324	141	14	-
52.0903	Travel-tourism management	876	296	640	287	126	-	-
52.0999	Hospitality services management, other	134	10	201	638	13	2	-
52.10	Human resources management	1,228	250	755	10,303	6,630	117	-
52.1001	Human resources management	1,121	198	438	5,684	3,118	24	-
52.1002	Labor/personnel relations and studies	47	33	264	1,012	669	16	-
52.1003	Organizational behavior studies	-	-	2	2,282	2,423	76	-
52.1099	Human resources management, other	60	14	51	1,345	420	1	-
52.11	International business	69	26	287	5,248	2,893	15	-
52.12	Business information and data-processing services	8,536	7,680	15,823	23,279	6,123	14	-
52.1201	Management information systems and business data processing, general	1,059	1,597	3,934	19,811	4,797	12	-
52.1202	Business computer programming/programmer	1,451	710	3,167	271	165	-	-
52.1203	Business systems analysis and design	524	281	984	724	99	2	-
52.1204	Business systems networking and telecommunications	3,265	2,522	4,186	2,132	799	-	-
52.1205	Business computer facilities operator	558	516	885	87	-	-	-
52.1299	Business information and data-processing services, other	1,679	2,054	2,667	474	273	-	-
52.13	Business quantitative methods and management science	6	12	222	4,401	1,570	14	-
52.1301	Management science	-	12	219	3,320	1,091	6	-
52.1302	Business statistics	-	-	-	27	17	4	-
52.1399	Business quantitative methods and management science	6	-	3	1,054	462	4	-
52.14	Marketing management and research	195	186	1,308	32,084	2,440	45	-
52.1401	Business marketing and marketing management	153	136	1,199	30,564	2,075	42	-
52.1402	Marketing research	-	-	-	137	109	-	-
52.1403	International business marketing	37	31	29	98	87	-	-
52.1499	Marketing management and research, other	5	19	80	1,285	169	3	-
52.15	Real estate	1,122	147	195	689	294	-	-
52.16	Taxation	1,162	2	-	-	1,253	-	-
52.99	Business management and administrative services, other	487	350	1,464	3,675	2,476	29	-
95	Field of study not reported	988	765	365	264	24	-	-

- Data not available

Appendix. Sources of State and Local Labor Market and Career Information

State employment security agencies develop detailed information about local labor markets, such as information on current and projected employment by occupation and industry, characteristics of the workforce, and changes in State and local area economic activity. Listed in this appendix are the Internet addresses of these agencies and addresses and telephone numbers of their directors of research and analysis. State occupational projections also are available on the Internet at <http://www.projectionscentral.com>.

Alabama

Chief, Labor Market Information Division, Department of Industrial Relations, 649 Monroe St., Room 427, Montgomery, AL 36131-2280. Telephone: (334) 242-8859.
Internet: <http://www.dir.state.al.us/lmi>

Alaska

Chief, Research and Analysis Section, Department of Labor and Workforce Development, 1111 West 8th St., Juneau, AK 99802-5501. Telephone: (907) 465-6035.
Internet: <http://almis.labor.state.ak.us>

Arizona

Research Administrator, Department of Economic Security, 1789 West Jefferson St., 733A, Phoenix, AZ 85007-3295. Telephone: (602) 542-3871.
Internet: <http://www.workforce.az.gov>

Arkansas

Director, Labor Market Information, Employment Security Department, P.O. Box 2981, Little Rock, AR 72203-2981. Telephone: (501) 682-3159.
Internet: <http://www.state.ar.us/esd>

California

Chief, Labor Market Information Division, MIC57, Employment Development Department, 7000 Franklin Blvd., Building 1100, Sacramento, CA 95823. Telephone: (916) 262-2160.
Internet: <http://www.calmis.cahwnet.gov>

Colorado

Director, Labor Market Information, Department of Labor and Employment, 1515 Arapahoe St., Tower 2, Suite 300, Denver, CO 80202-2117. Telephone: (303) 318-8898.
Internet: <http://http://coworkforce.com/lmi>

Connecticut

Director, Employment Security Division, Research and Information, Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109-1114. Telephone: (860) 263-6255.
Internet: <http://www.ctdol.state.ct.us/lmi/index.htm>

Delaware

Chief, Office of Occupational and Labor Market Information, Department of Labor, 4425 N. Market St.-Fox Valley Annex, Wilmington, DE 19809-1307. Telephone: (302) 761-8069.
Internet: <http://www.delawareworks.com/oolmi/welcome.shtml>

District of Columbia

Chief, Office of Labor Market Research and Information, 64 New York Ave. NE., Suite 3035, Washington, D.C. 20002. Telephone: (202) 671-1633.
Internet: <http://does.ci.washington.dc.us/does/cwp/view,a,1233,q,538345.asp>

Florida

Process Manager, Labor Market Statistics, Agency for Workforce Innovation, MSC G-020, 107 E. Madison St., Tallahassee, FL 32399-4111. Telephone: (850) 488-1048.
Internet: <http://www.labormarketinfo.com>

Georgia

Director, Workforce Information and Analysis, Room 300, Department of Labor, 223 Courtland St., CWC Building, Atlanta, GA 30303. Telephone: (404) 232-3875.
Internet: <http://www.dol.state.ga.us/lmi>

Guam

Director, Government of Guam, Sunny Plaza, 2nd Floor, 125 Tun Jesus Crisostomo, Tamuning, GU 96911. Telephone: (671) 647-7066.

Hawaii

Chief, Research and Statistics Office, Department of Labor and Industrial Relations, 830 Punchbowl St., Room 304, Honolulu, HI 96813. Telephone: (808) 586-8999.
Internet: <http://www.state.hi.us/dlir/rs/loihi>

Idaho

Chief, Research and Analysis Bureau, Department of Labor, 317 Main St., Boise, ID 83735-0670. Telephone: (208) 334-6170.
Internet: <http://www.jobservice.ws>

Illinois

Director, Economic Information and Analysis, Illinois Department of Employment Security, 401 South State St., 7th Floor-North, Chicago, IL 60605. Telephone: (312) 793-2316.
Internet: <http://lmi.ides.state.il.us>

Indiana

Director, Labor Market Information - South E211, Department of Workforce Development, 10 North Senate Ave., Indianapolis, IN 46204-2277. Telephone: (317) 232-7460.
Internet: <http://www.dwd.state.in.us>

Iowa

Division Administrator, Information and Policy Division, Iowa Workforce Development, 1000 East Grand Ave., Des Moines, IA 50319-0209. Telephone: (515) 281-0255.
Internet: <http://www.state.ia.us/iwd>

Kansas

Chief, Labor Market Information Services, Department of Human Resources, 401 SW Topeka Blvd., Topeka, KS 66603-3182.
Telephone: (785) 296-5058.
Internet: <http://laborstats.hr.state.ks.us>

Kentucky

Manager, Research and Statistics Branch, Department for Employment Services, Workforce Development Cabinet, 275 East Main St., 2 W-G, Frankfort, KY 40621. Telephone: (502) 564-7976.
Internet: <http://www.workforcekentucky.ky.gov>

Louisiana

Director, Research and Statistics Section, Department of Labor, 1001 North 23rd St., Baton Rouge, LA 70804-4094. Telephone: (225) 342-3141.
Internet: <http://www.laworks.net>

Maine

Director, Division of Labor Market Information Services, Maine Department of Labor, 20 Union St., Augusta, ME 04330-6826.
Telephone: (207) 287-2271.
Internet: <http://www.state.me.us/labor/lmis/index.html>

Maryland

Director, Labor Market Analysis and Information, Department of Labor, Licensing and Regulations, 1100 North Eutaw St., Room 316, Baltimore, Md. 21201-2206. Telephone: (410) 767-2250.
Internet: <http://www.dlir.state.md.us/lmi/index.htm>

Massachusetts

Assistant Director for Research, Division of Employment and Training, 19 Staniford St., Boston, MA 02114. Telephone: (617) 626-6556.
Internet: <http://www.detma.org/LMIHome.htm>

Michigan

Director, Labor Market Information Division, Department of Career Development, 3032 West Grand Blvd., 9th Floor, Detroit, MI 48202. Telephone: (313) 456-3090.
Internet: <http://www.michlmi.org>

Minnesota

Labor Market Information Director, Department of Employment and Economic Development, 390 N. Robert St., 5th Floor, St. Paul, MN 55101. Telephone: (651) 296-4087.
Internet: <http://www.mnwfc.org/lmi.htm>

Mississippi

Chief, Labor Market Information Division, Employment Security Commission, 1520 West Capitol St., Jackson, MS 39215-1699.
Telephone: (601) 961-7424.
Internet: <http://www.mesc.state.ms.us/lmi/index.html>

Missouri

Research Manager, Labor Market Information, Department of Economic Development, 301 West High St., Jefferson City, MO 65102. Telephone: (573) 751-3609.
Internet: <http://www.works.state.mo.us/lmi>

Montana

Director, Research and Analysis, Department of Labor and Industry, 1327 Lockey and Roberts Sts., Helena, MT 59601. Telephone: (406) 444-2430.
Internet: <http://rad.dli.state.mt.us>

Nebraska

Administrator, Labor Market Information Center, Nebraska Workforce Development, 550 South 16th St., Lincoln, NE 68508. Telephone: (402) 471-9964.
Internet: <http://www.dol.state.ne.us/nelmi.htm>

Nevada

Chief, Research and Analysis, Department of Employment Training and Rehabilitation, 500 East Third St., Carson City, NV 89713-0020. Telephone: (775) 684-0387.
Internet: <http://detr.state.nv.us/lmi/index.htm>

New Hampshire

Director, Economic and Labor Market Information, Department of Employment Security, 32 South Main St., Concord, NH 03301-4587. Telephone: (603) 228-4123.
Internet: <http://www.nhes.state.nh.us/elmi>

New Jersey

Director, Labor Market and Demographic Research, Department of Labor, John Fitch Plaza, 5th Floor, Trenton, NJ 08625. Telephone: (609) 292-0099.
Internet: <http://www.state.nj.us/labor/lra>

New Mexico

Research Chief, Economic Research and Analysis, Department of Labor, 501 Mountain Rd., Albuquerque, NM 87102. Telephone: (505) 841-8645.
Internet: http://www.dol.state.nm.us/dol_lmif.html

New York

Director, Division of Research and Statistics, New York State Department of Labor, State Campus, Building 12, Room 402, Albany, NY 12240-0020.
Internet: <http://www.labor.state.ny.us>

North Carolina

Director, Labor Market Information Division, Employment Security Commission, 700 Wade Ave., Raleigh, NC 27605. Telephone: (919) 733-2936.
Internet: <http://www.ncesc.com>

North Dakota

LMI Director, Research and Statistics, Job Service North Dakota, 1000 East Divide, Bismarck, ND 58501. Telephone: (701) 328-2868.
Internet: <http://www.state.nd.us/jsnd/warehouse.htm?bookmark=warehouse>

Ohio

Director, Labor Market Information Division, Department of Job and Family Services, 4300 Kimberly Pkwy., 3rd Floor, Columbus, OH 43232. Telephone: (614) 752-9494.
Internet: <http://lmi.state.oh.us>

Oklahoma

Director, Economic Research and Analysis, Employment Security Commission, 2401 N. Lincoln, Room 402-1, Oklahoma City, OK 73105. Telephone: (405) 557-7265.
Internet: <http://www.oesc.state.ok.us/lmi/default.htm>

Oregon

Manager, Workforce and Economic Research, Oregon Employment Department, 875 Union St., NE., Room 207, Salem, OR 97311-9986.
Internet: <http://www.qualityinfo.org/olmiaj/OlmisZine>

Pennsylvania

Director, Center for Workforce Information and Analysis, Department of Labor and Industry, Seventh and Forster Sts., Room 220, Harrisburg, PA 17121-0001. Telephone: (717) 787-3266.
Internet: <http://www.dli.state.pa.us/workforceinfo>

Puerto Rico

Director, Bureau of Labor Statistics, Department of Labor and Human Resources, 505 Munoz Rivera Ave., 17th Floor, Hato Rey, PR 00918. Telephone: (787) 754-5340.

Rhode Island

Director, Labor Market Information, Department of Employment and Training, 1511 Pontiac Ave., Cranston, RI 02920. Telephone: (401) 462-8767.
Internet: <http://www.dlt.ri.gov/lmi>

South Carolina

Director, Labor Market Information Division, Employment Security Commission, 631 Hampton St., Columbia, SC 29201. Telephone: (803) 737-2660.
Internet: <http://www.sces.org/lmi/index.asp>

South Dakota

Director, Labor Market Information Division, Department of Labor, 420 S. Roosevelt St., Aberdeen, SD 57401-5131.
Internet: <http://www.state.sd.us/dol/lmic/index.htm>

Tennessee

Director, Research and Statistics Division, Department of Labor and Workforce Development, 500 James Robertson Pkwy., 11th Floor, Nashville, TN 37245-1000. Telephone: (615) 741-2284.
Internet: <http://www.state.tn.us/labor-wfd/lmi.htm>

Texas

Director, Labor Market Information, Texas Workforce Commission, 9001 North IH-35, Suite 103A, Austin, TX 75753. Telephone: (512) 491-4802.
Internet: <http://www.tracer2.com>

Utah

LMI Director, Workforce Information, Department of Workforce Services, 140 East 300 South, Salt Lake City, UT 84111. Telephone: (801) 526-9401.
Internet: <http://jobs.utah.gov/wi>

Vermont

Chief, Research and Analysis, Department of Employment and Training, 5 Green Mountain Dr., Montpelier, VT 05602. Telephone: (802) 828-4153.
Internet: <http://www.vtlimi.info>

Virgin Islands

Chief, Bureau of Labor Statistics, Department of Labor, 53-A, 54 A and B, Kronprindsens Gade, Charlotte Amalie, VI 00801. Telephone: (340) 776-3700.

Virginia

Director, Economic Information Services, Virginia Employment Commission, 703 East Main St., Richmond, VA 23219. Telephone: (804) 786-7496.
Internet: <http://www.vec.state.va.us/vecportal>

Washington

Director, Labor Market and Economic Analysis, Employment Security Department, 605 Woodland Square Loop, Lacey, WA 98506. Telephone: (360) 438-4804.
Internet: <http://www.wa.gov/esd/lmea>

West Virginia

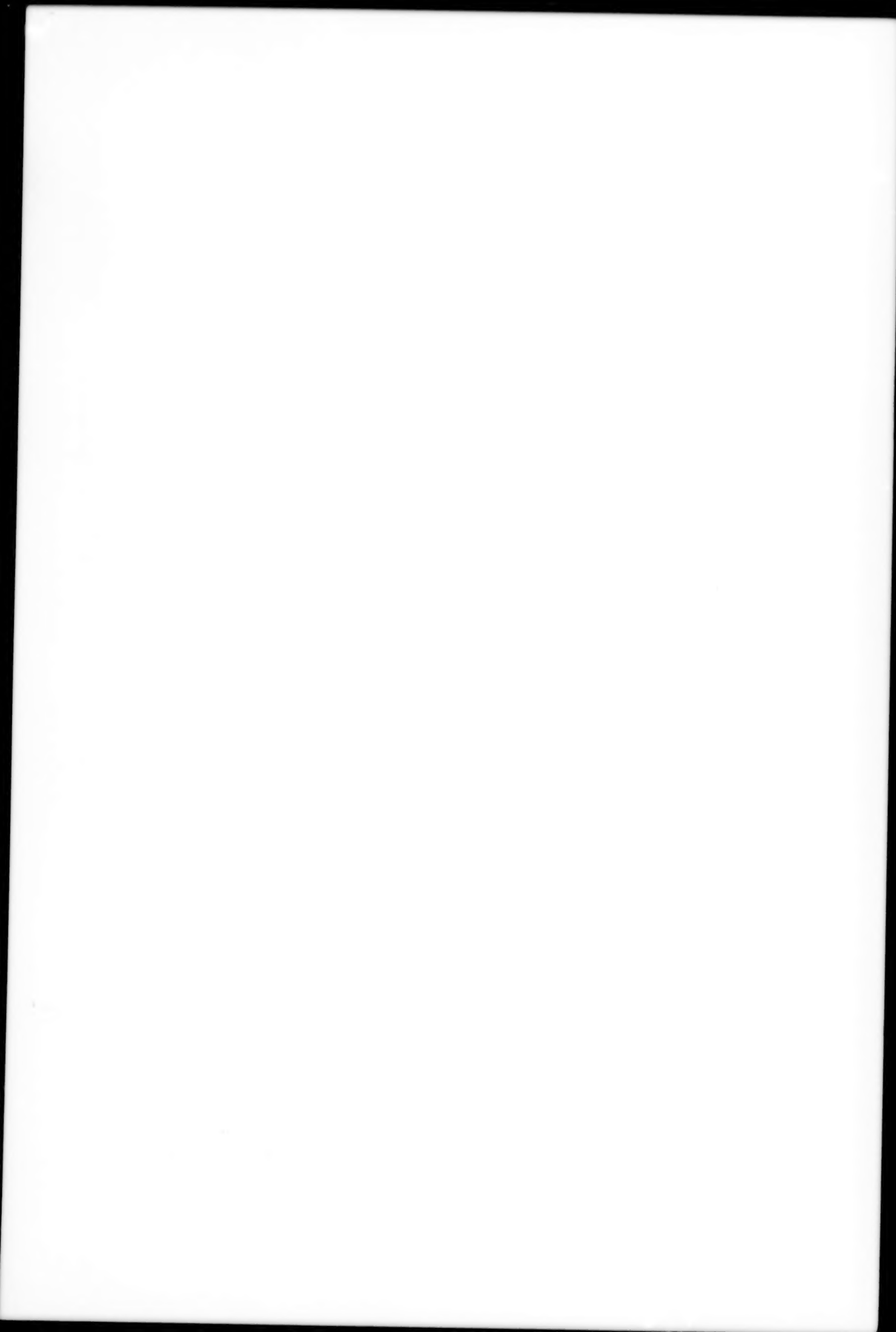
Director, Research Information and Analysis Division, Bureau of Employment Programs, 112 California Ave., Room 107, Charleston, WV 25305-0112. Telephone: (304) 558-2660.
Internet: <http://www.state.wv.us/bep/lmi/default.htm>

Wisconsin

Director, Bureau of Workforce Information, Department of Workforce Development, 201 E. Washington Ave., Madison, WI 53702. Telephone: (608) 267-9705.
Internet: <http://www.dwd.state.wi.us/lmi>

Wyoming

Manager, Research and Planning, Department of Employment, 246 South Center St., 2nd floor, Casper, WY 82601. Telephone: (307) 473-3807.
Internet: <http://wydoe.state.wy.us>



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